DOCUMENT RESUME

ED 418 752 JC 980 215

AUTHOR	Baker, Ronald L.
TITLE	Factor Patterns That Foster or Impede Distance Education in Washington State Community and Technical Colleges.
PUB DATE	1998-03-02
NOTE	172p.; Ed.D. Dissertation, Oregon State University.
PUB TYPE	Dissertations/Theses - Doctoral Dissertations (041)
EDRS PRICE	MF01/PC07 Plus Postage.
DESCRIPTORS	Administrator Attitudes; Community Colleges; *Distance Education; Educational Technology; *Holistic Approach; *Performance Factors: Program Implementation; State Surveys; Teacher Attitudes; Two Year Colleges
IDENTIFIERS	*Washington Community and Technical Colleges

ABSTRACT

A study was conducted to determine factors that foster or impede the development of distance education (DE) programs. A review of the literature related to transformation in higher education, technology and learning, and DE was conducted and the history of DE in the Washington State Community and Technical College System was reviewed. In addition, interviews were held with one administrator and one DE practitioner each at five community and technical colleges in Washington. Washington state and institutional documents related to DE were also reviewed. The study revealed the following: (1) the five major factors affecting the development of DE in the colleges were commitment to DE by institutional leaders, technological capacity, the operational and technological support available, faculty and department acceptance, and funding; (2) these five factors were dynamically and interdependently linked in a "whole" system that was greater than the sum of its parts; (3) DE in the community and technical colleges was best advanced by coordinating and balancing these factors, rather than by focusing on any single factor; and (4) factors that may potentially affect DE in the future include issues related to intellectual property, college governance, institutional contracts, state/institutional policies, and accreditation. Appendixes provide principles of good DE practice, a chronology of DE in Washington, a map of Washington technical and community colleges, and a consent form and interview guide. Contains 253 references. (BCY)

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ED 418 752

Factor Patterns That Foster or Impede Distance Education in Washington State Community and Technical Colleges

by

Ronald L. Baker

A DISSERTATION

submitted to

Oregon State University

in partial fulfillment of
the requirements for the
degree of

Doctor of Education

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AN ABSTRACT OF THE DISSERTATION OF

Ronald L. Baker for the degree of Doctor of Education in Education presented on March 2, 1998. Title: Factor Patterns That Foster or Impede Distance Education in Washington State Community and Technical Colleges.

Abstract approved: ______________________
Ruth E. Stiehl

This study was conducted to develop a holistic understanding of distance education by identifying factors and patterns of factors that foster or impede distance education. The Washington State Community and Technical College System provided the context for the investigation of four primary questions:

1. What is the community and technical college perception of distance education?
2. What factors affect the development of distance education?
3. Which factors and factor patterns foster distance education?
4. Which factors and factor patterns impede distance education?

A literature review revealed three major themes related to this study: (a) change and transformation in higher education, (b) technology and learning, and (c) distance education. Further understanding of the context for this study was derived from a review of the history of distance education in Washington State.

Data were collected from interviews, documents, and participant field observations. Interviews were conducted with one administrator and one

practitioner from four community colleges and one technical college. The four community colleges were stratified by location and distance education history. Constant comparative data analysis generated four hypotheses from this study:

1. The five major factors that affect the development of distance education in community and technical colleges are: (a) institutional leadership, (b) technology, (c) support, (d) faculty and department acceptance, and (e) funding.
2. These five major factors are dynamically and interdependently linked to create a "whole" that is greater than the sum of its parts.
3. Distance education in community and technical colleges is advanced by coordinating and balancing these factors, rather than by focusing exclusively on any single factor.
4. Factors that have the potential to foster or impede distance education in the future, but little effect in 1997 include: (a) intellectual property, (b) governance, (c) contracts, (d) policies, and (e) accreditation.

This study generated findings with implications for community and technical college distance education leadership, management, and practice. Additional research is warranted. It is recommended that statistical analysis of factors, validated by a modified Delphi panel, be conducted.

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Doctor of Education dissertation of Ronald L. Baker presented on March 2, 1998

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I understand that my dissertation will become part of the permanent collection of Oregon State University libraries. My signature below authorizes release of my dissertation to any reader upon request.

Ronald L Baker

Ronald L. Baker, Author

ACKNOWLEDGMENTS

A number of people deserve special recognition for the contributions they made to the completion of this dissertation. First and foremost among them is my major professor, Dr. Ruth Stiehl. Her insights, suggestions, and sensitivities were instrumental in guiding me through this research project. In addition to being my advisor, she was a mentor and a model for higher education leadership. It was both my pleasure and my privilege to work with her and to learn from her.

I also want to acknowledge the other members of my dissertation committee: Dr. Henry Sredl, Dr. Jewell Manspeaker, Dr. Rich Morgan, and Dr. ZoeAnn Holmes. Their insights, comments, and suggestions added greatly to my appreciation for the many levels of complexity that exist in higher education. They enriched my understanding of distance education, leadership, and transformation in higher education.

I owe a great deal of gratitude to the many participants in this study. Without exception, they were gracious and generous in sharing their experiences, insights, and perceptions. This study would have not been possible without them.

Finally, I want to express my appreciation to the Community College Leadership Program faculty and the members of my cohort. They made my experiences - and memories - rich, rewarding, and sustaining.

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LIST OF ACRONYMS

ACE	American Council of Education
CODE	Coordinators of Distance Education
CTC	Communications Technology Center
ETI	Educational Technology Initiative
ETSPP	Educational Technology Strategic Planning Process
FTES	Full Time Equivalent Student
IC	Instruction Commission
IIG	Internet Information Group
IT	Information Technology
K-20	K-20 Educational Telecommunications Network
NCHEMS	National Center for Higher Education Management Systems
NUD-IST	Non-numerical Unstructured Data Indexing Searching and Theory-building
NWTN	NorthWest Telecommunications Network
VTUG	Video Telecommunications Users Group
WACTC	Washington Association of Community and Technical Colleges
WCCCC	Washington Community College Computing Consortium
WCET	Western Cooperative for Educational Telecommunications
WGU	Western Governors University
WHEDEC	Washington Higher Education Distance Education Consortium
WHETS	Washington Higher Education Telecommunication System
WIT	Washington Interactive Network

FACTOR PATTERNS THAT FOSTER OR IMPEDE DISTANCE EDUCATION IN WASHINGTON STATE COMMUNITY AND TECHNICAL COLLEGES

CHAPTER I

INTRODUCTION

> Enrollment shifts in higher education, economic forces in the workplace, and changes in technologies are creating new opportunities for distance learning for technology-enhanced instruction. As increasing number [sic] of working adult students seek access to higher education, they will demand more time- and place-independent learning options and technology-based institutional support services. While higher education "brick and mortar" funds are decreasing, there will be new opportunities to develop technology and telecommunications infrastructures and to connect with students in their homes or in their workplace. (King, 1995, p. 5)

Context

The history of higher education throughout the world has been one of aggregating scarce and expensive learning resources (faculty, libraries, etc.) into a limited number of centralized college and university sites (Connick, 1996; Rogers & Wells, 1997; Twigg, 1993). To gain access to higher education, students were required to physically travel to those (frequently distant) locations. That situation changed in 1883 when New York State authorized the Chautauqua Institute to award degrees for coursework completed by correspondence study (Moore & Kearsley, 1996). Since that time, distance education has been used to expand student access to higher education by duplicating and distributing conventional programs and services from centralized campuses to outreach centers (Blumhardt & Cross, 1996; Brown & Brown, 1994; Knapper, 1988; Moore & Thompson, 1997; Verduin & Clark, 1991). Modern telecommunications technologies provide great potential to disperse learning resources to students at their homes and worksites (Rogers & Wells, 1997; Sherron & Boettcher, 1997).

Distance education has emerged as a global phenomenon (Holmberg, 1995; Keegan, 1990; Moore & Kearsley, 1996; Verduin & Clark, 1991). It is believed to be the fastest growing instructional pattern in the world (Brown & Brown, 1994). In some countries distance education has become a national initiative. In those countries distance education is viewed as a socially equitable instrument of mass education that expands access to higher education, lifelong learning, and workplace education (Nunan & Calvert, 1992).

Willis (1992) notes that over the past 25 years, leadership in distance education has come primarily from Australia, Europe, and Canada. In Australia, for example, most universities provide distance education courses as part of their curricula (Moore & Kearsley, 1996). The British Open University enrolls more than 130,000 students annually and is recognized throughout the world as the most successful model for distance education (Faibisoff & Willis, 1987; Moore & Kearsley, 1996). International interest in distance education may have resulted, in part, because of the perception that educational models that worked well in the past are not adapted to meet the challenges of the 21st century (Battin, 1996; Eaton, 1992; Lever, 1991; Sherritt & Basom, 1996).

The United States does not operate an Open University, but a growing number of public and private organizations offer distance education courses and programs (Moore & Kearsley, 1996). This interest in distance education may be at least partially explained by the projections of significant growth in higher education enrollments in the United States over the next 15 years (Academic Innovation Center, 1997; Kelly, 1990; Ohler, 1991; Witherspoon, 1997). These enrollment pressures will occur for several reasons.

The first wave of the baby boom echo generation is at higher education's doorstep – increasing competition for admission to institutions with limited physical and fiscal capacities (Academic Innovation Center, 1997; Faibisoff & Willis, 1987; King, 1995; Washington State Office of Financial Management, 1996). Assuming current levels of participation, demand for higher education from the 18 to 24 age group is projected to increase by 30% over the next decade (Macunovich, 1997). Johnstone and Krauth (1996a) expect higher education enrollments in Utah will increase by nearly 100% by the year 2008. D'Amico (1995) predicts that the California State University would need to build one 15,000 student campus every year for the next 10 years to meet expected demand. Dolence and Norris (1995) claim that to meet the projected demand for workforce training in the United States by the year 2010, "a campus would have to be opened every 8 days" (p. 7).

Changes in society as a whole are expected to produce growth in both population size and participation rates for adults, people of color, the economically and educationally disadvantaged, persons with disabilities, and welfare recipients

(Commission on the Future of Community Colleges, 1988; Lever, 1992; Sherritt & Basom, 1996; Washington State Higher Education Coordinating Board, 1996). Adult students are expected to be the majority, and fastest growing segment, of higher education student populations in the 21st century (Dolence & Norris, 1995; Galusha, 1997; Twigg, 1993). Changing workplace conditions place additional pressures on higher education to retrain displaced workers and upgrade employed workers' skills to current industry standards (Kelly, 1990; King, 1995; Lever, 1991; Washington State Workforce Training and Education Coordinating Board, 1996). These pressures on capacity are occurring in times of heightened competition for public funds and changes in federal policies that limit available resources (Washington State Office of Financial Management, 1996; Washington State Higher Education Coordinating Board, 1996; Witherspoon, 1997).

Finding ways to serve the millions of new and continuing learners that existing higher education facilities cannot accommodate is a fundamental issue facing higher education (D'Amico, 1995). Some insight into the contextual issues associated with this problem - and the role distance education might play in its solution - may be obtained by looking more closely at events within Washington State.

Background

> Some institutions are leaping at "distance education" as a near-term solution for financial and other problems - without taking the necessary time to understand the "solution's" requirements. (Gilbert, 1995a, p. 17)

Accessible, high quality, and efficient postsecondary education is important to Washington State's economic and social well being. Public higher education capacity is constrained by limited resources, rising costs, and geographic-based policies and conventional higher education practices that limit flexibility in meeting existing and emerging educational needs and expectations (Washington State Office of Financial Management, 1996). Distance education has the potential to help the State of Washington address these issues to span geographic region and policy boundaries.

According to the Washington State Office of Financial Management (1996), demographic projections for Washington State higher education student populations diverge sharply from the stable patterns of the last 25 years. Between 1995 and 2010, the 17 to 22-year-old population is projected to grow from 410,477 to 562,300. In that same time frame the 23 to 29-year-old population is projected to grow from 541,018 to 690,867. Assuming current participation rates, space for an additional 55,392 public and private full-time equivalent students (FTES) will be required by the year 2010. If Washington State is to bring participation rates in upper division and graduate programs up to the national average, the required number of additional higher education FTES rises to 84,100 by the year 2010. Retraining current workers and training unemployed workers will add an estimated 10,000 students to that total.

To adequately fund projected Washington State higher education enrollments, the Washington State Office of Financial Management (1996) estimates $1.937 billion will be needed by the year 2010. Based on the average rate of growth between 1990 and 1995 (about 1.5% per year), state general fund support for higher education would grow to just $1.221 billion by the year 2010. The anticipated funding shortfall to meet projected higher education needs is $716 million in the year 2010. Faced with this projected funding gap, the Washington State Higher Education Coordinating Board proposed an enrollment plan to accommodate only 56,700 FTES of the projected need for 84,100 FTES in the year 2010 (Washington State Office of Financial Management, 1996). In making its recommendations, the Washington State Higher Education Coordinating Board (1996) noted that Washington State cannot continue to conduct "business as usual" (p. 34) in providing students with access to higher education. It concluded that ways must be devised to serve more students based on a broader understanding of costs and benefits of delivery mechanisms, instructional methodologies, and technologies.

Recent funding commitments reflect the importance of technology and distance education in Washington State. The 1995 Washington State Legislature allocated $17.8 million to the Washington State community and technical colleges for an Educational Technology Initiative (ETI). Included in that amount was $6.2 million for technology infrastructure and $11.6 million for equipment expenditures by individual colleges (Washington State Board for Community and Technical Colleges, 1996d). ETI expenditures were limited to equipment purchases, so personnel, operational expenditures, and faculty/curriculum development activities were excluded from the scope of the ETI initiative. A number of community and technical colleges used ETI funds to obtain computers, upgrade campus networks, and acquire video technologies in anticipation of offering distance education courses.

The 1995 ETI initiative was followed with the passage of Senate Bill SB6705 by the 1996 Washington State Legislature. SB6705 authorized $42.3 million for the K-20 Educational Telecommunications Network to establish a statewide infrastructure to connect K-12 sites, community and technical colleges, and universities. When completed, the K-20 infrastructure will deliver primary, secondary, and postsecondary courses and degrees via distance education throughout the state (Washington State Department of Information Services, 1996d). As with the ETI initiative, K-20 funds are limited to technological infrastructure and equipment purchases only. Expenditures for personnel, operational expenses, and faculty/curriculum development activities are specifically excluded from ETI funds. The 1996 Washington State Legislature did, however, approve an additional $2 million for the Fund for Innovation and Quality to fund incentive grants to Washington State's community and technical colleges. The purpose of the innovation fund was to support pilot projects that expand access and improve student success by innovative and collaborative methods through the implementation of educational technology (Washington State Board for Community and Technical Colleges, 1996c). A number of innovative distance education pilot projects were developed and implemented as a result of the Fund for Innovation and Quality grants.

In 1996, the Communications Technology Center (CTC) generated interest for a feasibility study to investigate shared development and Internet delivery of courses through a systemwide consortium of Washington State community and technical colleges (Washington State Board for Community and Technical Colleges, 1996c). One rationale for proposing the study was an interest in identifying and answering a set of questions regarding distance education curriculum, governance, infrastructure, funding, and administration issues (Washington State Board for Community and Technical Colleges, 1996c). The feasibility study was not implemented and those issues remain unaddressed.

Following successful implementation of the ETI, the Washington State Board for Community and Technical Colleges initiated a comprehensive Educational Technology Strategic Planning Process (ETSPP). The grounding vision for the ETSPP was based on three fundamental values: (a) expanding access to educational programs, (b) improving quality and value of learning to the student, and (c) increasing efficiency and productivity to increase educational results for individual colleges and the Washington State Community and Technical College System as a whole (Washington State Board for Community and Technical Colleges, 1996d). ETSPP recommendations included strategies to complement ETI, K-20, and Fund for Innovation and Quality initiatives to foster achievement of the ETSPP goals (Washington State Board for Community and Technical Colleges, 1996d). The ETSPP planning process spawned interest in developing a strategic plan for distance education for the Washington State community and technical colleges. These planning efforts demonstrate a growing interest and awareness of distance education as a system of interacting and interdependent factors (Washington State Board for Community and Technical Colleges, 1996d, 1997).

Washington State's interests and investments in distance education are not unique. Oregon State's commitment to statewide community college distance education activities dates back to 1981 with the formation of the Oregon Community College Telecommunications Consortium (Baker, 1997b). In 1990, the Oregon Legislature appropriated $8 million to establish ED-NET, a satellite-based telecommunications infrastructure system for distance education course delivery throughout the state (Hezel, 1991). In 1997 the Oregon community colleges adopted a statewide distance education strategic plan that implemented a collaborative distance education course sharing framework among colleges (Baker, 1997b).

The State of Colorado provides another example of statewide interest and commitment in distance education. In 1995 the Colorado General Assembly passed House Bill 95-1196 to authorize creation of the Colorado Electronic Community College as the twelfth member of the Colorado community college system (Epper, 1996). The Colorado Electronic Community College was created for the specific purpose of delivering a full community college curriculum entirely by asynchronous distance education means (Witherspoon, 1997). The Colorado legislature also committed $8.7 million to create a state-of-the-art Education Technology Training Center to support distance education course development and to train faculty in the use and production of technology-based instructional materials (Epper, 1996; Witherspoon, 1997).

Statement of the Problem

This study was conducted to develop a holistic understanding of distance education by identifying factors and patterns of factors that foster or impede distance education. The Washington State Community and Technical College System provided the context for four primary questions that guided this investigation:

1. What is the community and technical college perception of distance education?
2. What factors affect the development of distance education?
3. Which factors and factor patterns foster distance education?
4. Which factors and factor patterns impede distance education?

Importance of the Study

> There is no precedent to show how to transform an educational institution or system into a distance education system. . . . Therefore, the most important research problems in our field concern the processes of transformation and the processes of adoption of new procedures, new ideas, new policies. This transformation cannot be left to speculation by theorists or to ad hoc experimentation (which is already happening). To move in this direction we need systematic and carefully designed studies. (Moore & Kearsley, 1996, p. 233)

Systems research in the field of distance education has been minimal (Saba & Twitchell, 1988). Escalating educational, political, and economic expectations underscore the need to understand the factors and factor patterns that foster or impede distance education in public higher education. Kelly (1990) notes there is virtually no investment in research focused on fundamental changes in the way instruction might be delivered in the 21st century. New telecommunication and computer technologies have the potential to significantly affect the ways courses are delivered in the future, yet existing research is limited and offers few guidelines to design implementation activities (Kelly, 1990; Morrison & Lauzon, 1992). Research that has been conducted yields results that are somewhat disorganized, generally fragmented, and frequently contradictory (Moore & Thompson, 1997). Little holistic research in distance education has been conducted, since researchers have focused more on investigations of constituent parts of distance education than on investigations of distance education as a whole (Moore & Kearsley 1996; Willis, 1992). Dunning (1990) suggests that the focus of research should be broadened to include the forces that act on the managerial and leadership considerations that are embedded in the ever-changing context of distance education.

The need for a systems view of distance education was expressed by the Washington State Superintendent of Public Instruction (1992) in a report of the Ad Hoc Technology Task Force on Education Reform and Technology. One of the Task Force's basic assumptions was that factors such as instructional strategies, learning environments, and access to technological tools must be addressed simultaneously to significantly effect change in schools. The Washington State Higher Education Coordinating Board (1996) echoed the need for a holistic view of distance education in noting the need to determine how creative uses of emerging technologies and methodologies are encouraged and what barriers to experimentation must be removed. The Higher Education Coordinating Board

(1996) went on to emphasize the "importance of knowing how incentives can be aligned with desired outcomes to generate the most effective, long-term change and avoid unintended side effects" (p. 33).

Based on an expectation that funding commitments will result in expanded access to instructional programs and services, improved quality of learning, and greater operational efficiencies, Washington State has committed a minimum of $62.1 million over the past 2 years to distance education related initiatives. A comprehensive, ongoing financial commitment will be required from Washington State to fund future statewide distance education initiatives.

The most important dimension of this study is its focus on the whole context of higher education as it influences the emergence of distance education. This study provides the research structure and systems perspective that is missing in much of existing distance education research (Moore & Thompson, 1997). Its focus is to discover and describe influential distance education factor patterns at the macro level within the context of an increasingly complex higher education environment. Results from this systems-based study may provide insights for decision making on distance education-related policy, funding, organization, and operations issues. More broadly, they may help to identify indicators of transformation to assist higher education leaders in designing distance education implementation strategies that maximize the benefits of funding, resource, and personnel commitments.

Definition of Terms

Asynchronous Instruction – Instruction that does not require simultaneous student participation with fellow students or with the instructor.

Barrier – Practices, situations, policies, and attitudes that hinder development or adoption of appropriate distance education methodologies (Kovel-Jarboe, 1989).

Baseline Distance Education History – At least one implementation of distance education offered by a Washington State technical college in a minimum of three terms during 1994-1995 and in a minimum of three terms during 1995-1996 (Baker, 1995, 1996).

Community College Qualifying Distance Education History – Two or more implementations of distance education offered by a Washington State community college in a minimum of three terms during 1994-1995 and in a minimum of three terms during 1995-1996 (Baker, 1995, 1996).

Conventional Education – Formal classroom-based instruction in a school, college, or university setting, where teacher and students are physically present at the same time at the same place (Kaye & Rumble, 1979).

Conventional Funding – Funding to support usual and customary college operations.

Course – A complete body of prescribed studies constituting a curriculum (Morris, 1982).

Delphi Panel – A method to produce group consensus in quantifying intangible or vague variables through the use of a series of questionnaires that solicit and combine the knowledge, abilities, and opinions of a diverse group of experts (Lindeman, 1974).

Distance Education – A strategy to achieve identified educational outcomes through planned instructional activities in which a learner is separated from an instructor by time or place (Baker, 1997a).

Educational Technology – Electronic information and communication technologies that include: campus and statewide networks, multimedia computers, computer software, audio-, video-, and computer-conferencing systems, the Internet and World Wide Web, and other emerging information technologies applied to instruction, libraries, and student support processes (Washington State Board for Community and Technical Colleges, 1996d).

Factor – A contextual influence or constraint that fosters or inhibits distance education (Brigham, 1992).

Factor Pattern – A reliable sample of factors, tendencies, or other observable features characterized as fostering or inhibiting distance education (Merriam-Webster Editorial Staff, 1996).

Foster – To promote or encourage growth or development (Merriam-Webster Editorial Staff, 1996).

Full Time Equivalent Student (FTES) – The equivalent of one student enrolled for 45 community college credit hours or 900 technical college contact hours in a year (Washington State Board for Community and Technical Colleges, 1996b).

Higher Education Transformation – A process consisting of four interlocking subprocesses: (a realigning higher education vision with the demands of the 21st century, (b) redesigning higher education organizations to achieve this realigned vision, (c) redefining the roles and responsibilities of all participants within realigned, redefined higher education organizations, and (d) reengineering organizational and academic processes to improve access, quality, and productivity (Dolence & Norris, 1995).

Holistic Research – Research focused on the context of a whole phenomenon and the interdependence of its parts, rather than a dissection and analysis of the parts (Morris, 1982).

Impede – To discourage or interfere with growth or development (Merriam-Webster Editorial Staff, 1996).

Incentive Funding – Funding designed to encourage individual or institutional movement toward targeted outcomes.

Indicator – An observable event, related to a set of actions, whose presence offers evidence of a particular condition (Simpson & Weiner, 1989).

Infrastructure – The technologies and resources in an environment that supports the mission of an institution (Sherron & Boettcher, 1997).

Institutional Technology Capacity – The technology infrastructure used by colleges to develop, produce, or deliver distance education instructional programs and support services.

Leadership - The process of persuasion or example by which an individual (or leadership team) induces a group to pursue objectives held by the leader or shared by the leader and his or her followers (Gardner, 1990).

Principles of Best Practices - A framework of guiding qualities that characterize an integration of components to achieve optimum effectiveness (American Council on Education, 1996b).

Rural Community College - A Washington State community college located more than 25 miles away from the major metropolitan areas of Everett, Seattle, Spokane, Tacoma, and Vancouver.

Student Technology Capacity - The technology infrastructure used by students to acquire distance education instructional programs and support services.

Subsystem - A system that functions as an element of a more encompassing system.

Synchronous Instruction - Instruction designed for simultaneous participation of students with fellow students and the instructor.

System - A collection of parts that interconnect to function as a whole in such a way that any subdivision of the whole results in a loss of its essential properties (Ackoff, 1995).

Technology - The media and working channels that deliver and exchange information or facilitate interaction between the source and receiver. or among sources and receivers (Akyurekoglu, 1996).

Urban Community College - A Washington State community college located within 25 miles of the major metropolitan areas of Everett, Seattle, Spokane, Tacoma, and Vancouver.

Washington State Board for Community and Technical Colleges - The legislated governing and coordinating body charged with providing general supervision and control over the for Washington State Community and Technical College System (Washington State Board for Community and Technical Colleges, 1995).

Washington State Community and Technical College System - The system of 27 public community colleges and 5 public technical colleges sanctioned, funded, and coordinated by the State of Washington (Washington State Board for Community and Technical Colleges, 1995).

Assumptions

This study was based on the following assumptions:

1. Substantial change in community and technical colleges is inevitable and distance education will be one element of that substantive change.
2. Information technologies and innovative instructional methodologies can have a transformational impact on community and technical colleges.

3. Distance education issues are increasingly intertwined with core college issues that require resolution at the highest levels of administrative and governance structures.
4. Students will access community and technical college instruction and support services through an expanding combination of methods and technologies in the 21st century.
5. Distance education is a complex system of interactive and interdependent factors.
6. Distance education instructional methodologies will become integrated into mainstream instructional activities.

Limitations of the Study

The researcher acknowledges certain limitations to this study, including the following:

1. This study was conducted by a single researcher and limited by that single researcher's perceptions and interpretations. Other forms of triangulation were required to enhance the trustworthiness of the results.
2. This study was limited to a small, purposefully selected set of institutions and individuals from within the Washington State Community and Technical College System. The results are, therefore, bound to the context within which they were identified.

3. Triangulation occurred with individuals with naturalistic paradigm perspectives. These individuals were generally persons in leadership positions within the Washington State Community and Technical College System with perspectives similar to those of the researcher. Additional triangulation methods were required to enhance the trustworthiness of the results.

Summary

Population and participation growth rates projected for the next 15 years, coupled with inadequate funding projections and expanding educational mandates, threaten public higher education's ability to meet the anticipated needs for access to quality, cost-effective postsecondary educational programs and services. Distance education is viewed around the world as a viable and potential solution to that challenge. Interest in distance education in the United States is growing, as evidenced by recent planning and financial commitments in Washington State.

Distance education is frequently perceived more in terms of delivery media than instructional methodology. Consequently, much of the interest and funding commitments for distance education are centered on issues of technology and infrastructure. Existing distance education research contributes little to expand that view, since it focuses more on delivery media than distance education as a system of multiple interacting and interdependent factors.

If viewed only in narrow terms of technology and delivery, distance education is not financially viable and won't work pedagogically (Moore & Kearsley, 1996). A broader understanding of distance education is needed. This study was conducted to expand the current view of distance education by developing an understanding of it and its component parts in holistic terms. To achieve that holistic perspective, factors and patterns of factors perceived to foster or impede distance education in selected Washington State community and technical colleges were identified and described.

CHAPTER II

REVIEW OF THE LITERATURE

> Our [community college] future will be shaped by three interrelated factors – technology, society, and policy. (Gross, 1995, p. 28)

This study was conducted to develop a holistic understanding of distance education by identifying factors and patterns of factors that foster or impede distance education. The Washington State Community and Technical College System provided the context for this investigation. Guided by the assumption that distance education is a complex system of interactive and interdependent factors, a survey of the literature revealed three overarching interconnected themes related to this study of distance education. These three major themes include: (a) change and transformation in higher education, (b) technology and learning, and (c) distance education.

Change and transformation in higher education will focus on: (a) the paradigm shift from teaching to learning, (b) policy and organizational barriers to distance education, and (c) leadership. Distance education will focus on: (a) learning effectiveness, (b) principles of best practice, and (c) resistance to distance education. To gain a greater understanding for the context for this study, a literature review will describe the development of distance education in the Washington State Community and Technical College System. An overview of the literature survey conducted for this study is provided in Figure 1.

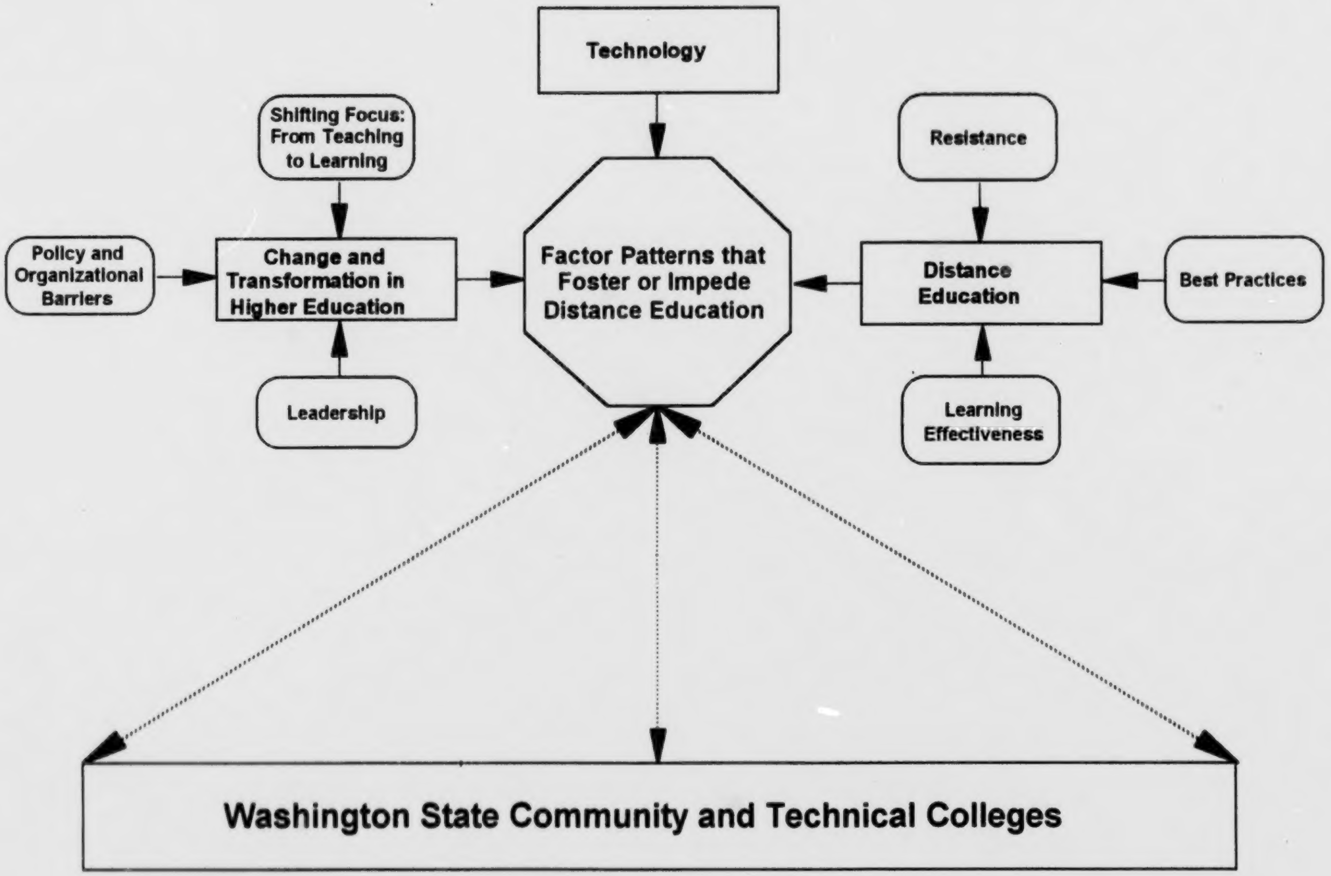
Technology
Shifting Focus: From Teaching to Learning
Resistance
Policy and Organizational Barriers
Change and Transformation in Higher Education
Factor Patterns that Foster or Impede Distance Education
Distance Education
Best Practices
Leadership
Learning Effectiveness
Washington State Community and Technical Colleges

FIGURE 1. LITERATURE SURVEY FRAMEWORK

Change and Transformation in Higher Education

> To survive the 21st century, higher education must undergo a paradigm shift from a culture that has defined education as a "classroom process" driven by facilities and a faculty-centered focus to a "learning-centered process" driven by a broad access to asynchronous information technologies and a student-centered focus. (King, 1995, p. 8)

To one degree or another pressures for change have always been evident in higher education, but these pressures have never occurred as rapidly nor as pervasively as at the end of this century (Cochren, 1995; Kelly, 1993). Nowhere is that more evident than the area of technology - especially in the community and technical colleges. Community and technical colleges have consistently focused on ways technology can help serve students. As technologies emerge and mature, however, colleges are challenged to modify the institutional practices and fund the resources needed to provide relevant technology-based educational services needed for Information Age learning (Doucette, 1993a). Community and technical colleges face serious challenges from commercial organizations that use high-quality technology-based distance education resources to meet the education and training needs of student populations traditionally served by the community and technical colleges (Doucette, 1997). The result is an educational environment that is unsettling, exciting, and challenging (Spina, 1988). At the same time, higher education's resistance to change - especially fundamental change that poses a challenge to traditional higher education paradigms - is widely reported (Connick, 1996; Green, 1996a; Heterick, 1993; Sherritt & Basom, 1996).

Current higher education paradigms and practices can be traced to the eras in which colleges and universities were formed in the modern western world. Of the 66 Western European institutions that existed in 1530 and still exist in recognizable form today, 62 are universities (Carnegie Council on Policy Studies in Higher Education, 1986). Higher education models established in medieval times are still found in colleges and universities today (Lewis & Wall, 1988; Miller, 1988; Twigg, 1994b). Other current higher education paradigms and practices can be traced to the agrarian and industrial ages where colleges were created to meet the needs of those eras (Connick, 1996; Mingle & Heydinger, 1994; O'Banion, 1996a; Sherritt & Basom, 1996). Twigg (1994a), in particular, suggests:

> Colonial colleges, whose mission centered on the moral preparation of civic leaders, relied on the residential campus to create a community of shared values. Shifting the emphasis of institutional mission to the practical application of knowledge, the land grant movement used the lecture as an efficient mechanism for professors to share the results of their research. The teaching infrastructure that emerged remains the predominant pedagogical model at most of our campuses today. (p. 23)

Many colleges are steeped in outdated traditions. One way they may manifest resistance to innovation is by imposing rigid rules and traditional regulations that perpetuate an educational system that is hierarchical, passive, and out of tune with modern society (Gharajedaghi & Ackoff, 1985; Wingspread Group on Higher Education, 1993).

Many critics predict the models of higher education that were successful in the past will be inadequate to address issues of cost, quality, and access for an information-based society of the 21st century (Cvancara, 1997; Eaton, 1992; Gross, 1995; Sherritt & Basom, 1996). Battin (1996) goes further in asserting that past strengths will become liabilities in the future if higher education is slow to react. Still others warn that the traditional, most common model for higher education is becoming economically unsustainable. They suggest that rather than attempting to update old models, new models for higher education must be developed and implemented (Kelly, 1993; Oblinger & Maruyama, 1996; Twigg & Doucette, 1992; Willis, 1994a). Higher education models that focus on faculty productivity should be replaced with new models that emphasize learner productivity built upon a paradigm that is learner centered and learning focused (Barr, 1995; Boggs, 1995; O'Banion 1996b; Perelman, 1994).

Critics disagree, however, on how the change process should happen in higher education. O'Banion (1996a) muses that "tweaking the existing paradigm is the equivalent of trimming the branches of a dying tree" (p. 19). Norris and Dolence (1996) claim the most attractive opportunities to accomplish changes needed for the Information Age are to combine and redirect current practices. Most, however, agree there is a need for fundamental transformation, instead of superimposing a silicon veneer onto outmoded systems, practices, and cultures (Dolence & Norris, 1995; Hawkins, 1991; Reigeluth, 1995).

Identifying and advocating the need for change is one thing, but producing it is quite another (Guskin, 1996). Transforming the old paradigm to a new one is a significant undertaking (Guskin, 1994b). The changes required for the transformation of higher education will be massive and radical in nature. They will fundamentally alter the nature of higher education (D'Amico, 1995; Munitz, 1995). These changes will occur during times of diminished public support for higher education as evidenced by higher education's decreasing share of public funding (Burke, 1994; Mingle & Heydinger, 1994; Munitz, 1995; Twigg, 1993). Fundamental change must occur, however, because maintaining the status quo will not protect higher education from the social and economic pressures projected for the 21st century (Heterick, 1993).

Reflecting on the difficulties accompanying change, Maciavelli (1532/1984) observed that "there is nothing more difficult to execute, nor more dubious of success, nor more dangerous to administer than to introduce a new order of things; for he who introduces it has all those who profit from the old order as his enemies, and he has only lukewarm allies in all those who might profit from the new" (p. 21). Change and transformation in any form are, at best, frightening and perilous passages (Kelly, 1993). Notwithstanding the uncertainties of change, many people expect technology to be a catalytic change agent for higher education (Green, 1996c; Heterick, 1994; Oberlin, 1996). The consequential and inevitable integration of information technologies with higher education practices will represent a fundamental institutional challenge even when financial, technical, and support staff resources are in place (Denton, 1994; Gilbert, 1994).

Community and technical colleges are becoming increasingly dysfunctional as they struggle to operate within dying paradigms (Daniel, 1997; Guskin, 1994a; O'Banion, 1996a; Reigeluth, 1995). They are experiencing heightened pressures to reduce costs, restructure institutional operations, and improve institutional productivity (Association of Governing Boards of Universities and Colleges, 1995; Baker & Gloster, 1994; Gilbert, 1996b; Wagner, 1992). Notwithstanding these obstacles, the shift to a new paradigm is gradually taking hold in American higher education as *any time, any place* learning becomes the dominate mode of learning (Barr & Tagg, 1995; Romiszowski & Criticos, 1994; Twigg & Doucette, 1992; Wingspread Group on Higher Education, 1993). Consistent with these changes is a need to restructure the purpose of community and technical colleges to face the challenges of the changing nature of learning, shifting student demographics, and expanding external pressures (Dede, 1994; Eaton, 1992; Oblinger & Maruyama, 1996; Roueche & Johnson, 1994).

The Paradigm Shift from Teaching to Learning

> To emphasize learning, the new [educational] system must no longer hold time constant and allow achievement to vary. It must hold achievement constant at a competency level and allow learners as much time as they need to attain competence. . . . That in turn requires changing the role of the teacher to that of a *coach* or facilitator/manager, rather than that of a dispenser of knowledge to groups of learners who pass by at the ring of a bell like so many widgets on an assembly line. (Reigeluth, 1995, p. 88)

As reflected in their mission statements, most community and technical colleges believe their purpose is to provide instruction (Barr, 1995). Not surprisingly, the literature is filled with references to the importance of teaching in community and technical colleges (O'Banion, 1996a). American community and technical colleges are the nation's premier teaching institutions and this distinction is a source of pride for faculty and administrators (Commission on the Future of Community Colleges, 1988; O'Banion, 1995). With such a concentrated focus, one might conclude that American higher education values teaching more than learning (Daniel, 1997).

While there is nothing inherently wrong with placing an emphasis on teaching, doing so results in an institutional accommodation for the needs, interests, and values of faculty more often than the needs, interests, and values of students (O'Banion, 1996a). Maintaining the old paradigm of teaching centeredness implies the primary role of community and technical colleges is to perpetuate and evaluate processes, rather than to produce learning outcomes (Boggs, 1995). Confronted with pressures for accountability, community and technical colleges are reviewing their roles and realigning their institutional missions around an outcome-based learning-centered paradigm, rather than an input-based teaching-centered paradigm (O'Banion, 1996a; Twigg, 1994b).

Under the traditional teaching-centered paradigm, colleges are judged on the basis of their inputs, resources, and processes (Barr, 1995; Boggs, 1993; Wingspread Group on Higher Education, 1993). Mortimer et al. (1984) conclude this emphasis encourages higher education institutions to focus on resource acquisition to the detriment of student learning. Putting learning at the heart of the academic enterprise will require an overhaul of the conceptual, procedural, curricular frameworks of most college campuses (Wingspread Group on Higher Education, 1993).

Forging a new paradigm is difficult, however, since traditions, habits, and teaching styles create a strong educational identity. Face-to-face interactions that characterized teaching-centered models for hundreds of years have created an enduring climate of trust which learning-centered models have not yet achieved (Spina, 1988). The academic mission and traditional core values of higher education must become more focused on student needs (Commission on the Future of Community Colleges, 1988; Hazen, 1992; Olcott & Wright, 1995). "The more we discover about how the mind works and how students learn, the greater the disparity between what we say and what we do" (Barr, 1995, p. 14).

The emergence of increasingly student-centered learning activities in the 1970s, facilitated by new instructional technologies introduced in the 1980s, contributes to a dramatic evolution in faculty roles. This evolution raises some fundamental questions on how faculty participate in emerging educational processes (Beaudoin, 1990). These questions include: How can faculty use distance education and new technologies to help keep community and technical colleges moving toward learning-centered practices? How can faculty provide timely and relevant learning opportunities for increasingly diverse (especially adult) student populations (Olcott & Wright, 1995)?

Policy and Organizational Barriers

> The barriers impeding the development of distance education are not technological, nor even pedagogical. We have plenty of technology, and we have a fair knowledge how to use it. The major problems are associated with organizational change, change of faculty roles, and change in administrative structures. (Moore, 1994, p. 4)

Higher education is an industry in denial (Dolence & Norris, 1995). Barriers to distance education are imposed by internally consistent and mutually reinforcing systems that resist modifications to accommodate nontraditional practices (Kolderie, 1990; Olcott, 1991). Faculty union protectionism and collective bargaining processes are examples of two such entrenched systems that resist distance education (Hezel, 1991; Moore, 1994; Olcott, 1991). A growing number of educational leaders see the need to remove administrative obstacles (Moore, 1994), but "the typical school environment is pregnant with disincentives for innovation which, over a period of a half century or more, have proven highly effective in preventing or reversing technological change in education" (Perelman, 1994, p. 186).

The greatest barriers associated with the development of distance education programs concern the management of faculty - specifically issues regarding conditions of appointment, incentives, rewards, release time for course development, and opportunities for faculty development (Galusha, 1997; Kovel-Jarboe, 1989; Moore & Thompson, 1997; Olcott & Wright, 1995). Traditional faculty promotion and tenure policies that fail to recognize efforts to develop or deliver alternative forms of instruction have a negative impact on distance education (Moore & Thompson, 1997; Olcott, 1991). Paramount among faculty concerns regarding distance education, however, is the nearly universal concern for the quality of the student learning experience - even though research indicates the effectiveness of student learning via distance education is comparable with on-campus student learning (Kearsley & Lynch, 1994; Kovel-Jarboe, 1989; Olcott, 1991).

Some barriers to distance education stem from inappropriate management structures and policies (Perelman, 1994). This phenomenon may be attributed, at least in part, to administrative procedures originally designed and built to meet the needs of traditional students in traditional classes offered by traditional faculty

(California State Postsecondary Education Commission, 1989; Lewis & Wall, 1988; Moore & Thompson, 1997; National Center for Higher Education Management Systems [NCHEMS], 1996). In some cases, historically entrenched state organizational structures and funding mechanisms lack the latitude and incentives to move beyond conventional educational practices (Barr & Tagg, 1995; California State Postsecondary Education Commission, 1991). Consequently, students are frequently discouraged by inappropriate or nonapplicable geographic-specific policies developed for local service areas (Kovel-Jarboe, 1989; Lewis & Wall, 1988). In some cases, distance education students encounter barriers in the form of admission/registration procedures, "add-on" distance education fees, residency requirements, transferability of courses, and articulation policies (Garland, 1993; Moore, 1994; Olcott, 1992; Truman, 1997).

The rapid pace of technology change and associated issues of technological obsolescence are also formidable hindrances to the acquisition of information technologies that support distance education (Lewis & Wall, 1988). Limited institutional resources and the high costs of acquiring and maintaining technological infrastructure can constrain the development of distance education dependent infrastructures (California State Postsecondary Education Commission, 1989, 1991; Galusha, 1997; Hezel, 1991; Kovel-Jarboe, 1989). Years of discrepancies between promises and actual results can further contribute to the lack of a compelling argument to justify requisite fiscal and personnel investments in distance education infrastructures (Gilbert, 1994; Lewis & Wall).

Without adequate equipment and support infrastructures, colleges are limited in their ability to capture the potential of emerging technologies to overcoming time and space restrictions on learning (Green, 1996c; Green & Gilbert, 1995).

State and regional policies can also inhibit the development and deployment of distance education. For example, accreditation criteria which favor traditional campus-centered, faculty-focused, classroom-based instructional practices discourage deviation from well-established historical standards (Hezel, 1991; Holznagel, 1990; Moore, 1994). Furthermore, distance education is frequently dependent on state and regional funding and is generally at a competitive disadvantage for those funds, since criteria, eligibility, and distribution of funds tend to follow historical patterns that favor traditional programs and delivery methods (Moore, 1994).

Leadership Concerns

> Higher education is not looking for messianic leaders to appear bearing stone tablets containing the ten commandments of transformation. Rather, we need leaders who can engage broadly participatory groups of academic and administrative leaders in developing shared visions for learning in the Information Age. (Norris & Dolence, 1996, p. 14)

Community and technical college leaders have a clear mandate to place learning at the top of the educational agenda for the 21st century (O'Banion, 1994b). Although the historic institution-centered community and technical college leadership model may be familiar and comfortable, it is increasingly dysfunctional and ineffective (Myran, Zejss, & Howdyshell, 1996). In the current environment where rules do not apply, boundaries disappear, and ambiguity prevails, educational leaders must balance historical strengths, present demands, and future uncertainties with organizational structures that are designed to support the past (Battin, 1996).

The challenges for community and technical college leaders in the 21st century are to: (a) simultaneously improve learning outcomes; (b) extend access to larger, older, and more diverse populations of learners; and (c) control escalating costs (D'Amico, 1995; Ehrmann, 1995a; Gilbert, 1995b). The leadership dilemma is not in determining which of these goals to achieve. The difficulty confronting community and technical college leaders is in finding ways to achieve all three goals at once (Twigg, 1994b). Many college leaders hope that emerging technologies and distance education methodologies will help them simultaneously accomplish all three goals (Gilbert, 1995b).

Strong educational leadership in the 21st century is essential to transform organizational culture (Penrod & Dolence, 1992). Higher education cannot advance as long as it holds tightly to old paradigms and practices that are increasingly ineffective or no longer work (Kelly, 1993). "One who walks into the future facing the past has no control over where he is going" (Ackoff, 1974, p. 9). As institutions move into the 21st century, new policies and practices will need to be developed to meet emerging and expanding expectations (Lorenzo & Gauri, 1988). Educational leaders will need to establish strategic directions to guide institutions through this process.

Translating philosophical positions into action, however, requires leadership skills vastly different from those used in stable and predictable environments of the past (Battin, 1996; Kanter, 1983; Marsh, 1989). These new leadership characteristics include: (a) clear and focused vision; (b) inclusion through collaboration; (c) clear, bidirectional communication; (d) recognition of efforts and achievements; and (e) commitment reflected in a willingness to confront resistance (Evans, 1993). The primary criteria for successful community and technical college transformation, however, may rest upon the leader's ability to motivate the college community and technical to develop shared institutional vision that is grounded in a larger sense of educational purpose and guided by clear educational priorities for the institution (Commission on the Future of Community Colleges, 1988).

Technology and Learning

> The primary barriers to innovation are not technological or economic, but psychological and political. (Dede 1990, p. 72)

Higher education seems to be attracted to the promise and potential of technology. But although the integration of information technology (IT) into higher education teaching and learning appears to be inevitable, education is behind other segments of the economy in adopting it (Gilbert, 1995c; Green & Gilbert, 1995; Kelly, 1990). It seems ironic that even though the future of higher education may very well depend on technology, its adoption by higher education is slow (Arms, 1992; Doucette, 1997; Kelly, 1990; Lewis & Wall, 1988).

Education is an interconnected system, so changes in any one segment have the potential to initiate changes in all other segments. If the secondary changes do not occur, attempts to change the primary segment may fail. In any context, efforts to change technology often fail, when the processes, structures, and people resist change (Kolderie, 1990). One reason education is slow to introduce electronic technology is the lack of a larger, more strategic effort to change the structure of the system of education - a system that has remained relatively unchanged throughout this century (Kolderie, 1990). Therefore, the integration of modern information technologies requires change at the systemic and institutional levels (Orcutt, 1986; Sherron & Boettcher, 1997; Twigg, 1994b).

Technology should not be introduced for its own sake (Franklin, Yoakam, & Warren, 1996; Hawkins, 1991; Wagner, 1993; Willis, 1992). The adoption of technologies, based on irrational decision criteria, typically leads to failed results and may create additional barriers to effective use if applied inappropriately (Lewis & Wall, 1988; Willis, 1992). Technologies should be treated as tools to foster needed educational reforms, rather than criteria for determining changes in educational practice (Cropley, 1982). Institutions should focus on what they *need* to do in order to succeed and survive and *then* determine the best uses of technology to serve those needs (Balzer, 1994). What technology does best - and will continue to do best in the future - is deliver content and provide access to information and services in spite of higher education's sometimes naive or excessive enthusiasm about the contributions of IT (Green & Gilbert, 1995; Moberg, 1993; Stern, 1992).

Strategic planning is an often overlooked, but essential factor in building a technological infrastructure for distance learning. Without overall plans, organizations tend to overestimate short-term developments and underestimate controlled on-campus instruction (Brand, 1995). In contrast, Dede (1990) and Miller (1988) argue that new technologies are not necessarily effective at extending traditional teaching. They claim IT should be used to restructure education by reconceptualizing and articulating basic instructional practices.

More than other segments of higher education, the greatest potential for significant change associated with the application of technology for instruction resides in the community and technical colleges (O'Banion, 1994a; Twigg, 1994b). New technologies have the potential to transform the ways faculty teach and students learn. They may foster significant changes, because they offer meaningful ways to meet the diverse needs of expanding community and technical college student populations (Burke, 1994; Dede, 1996; Kelly, 1990). As in all colleges, the mere introduction of technology alone, however, will not be sufficient (Bates, 1995; Burke, 1994; California State Postsecondary Education Commission, 1989; Dede, 1996). Successful integration of IT with instruction in community and technical colleges must go hand-in-hand with a transition in emphasis from teaching to learning (Purdy & Wright, 1992).

Distance Education

> Distance education systems are changing the way that educators teach and the way that adults learn and access education. As a result, distance education is impacting traditional education. (Baird & Monson, 1992. p. 71)

Distance education is defined as a strategy to achieve identified educational outcomes through planned instructional activities in which a learner is separated from an instructor by time or place (Baker, 1997a). A potentially long-term implications (Heterick, 1994; Oberlin, 1996). Green (1996b) reported in a 1996 Campus Computing Survey that only 43.4% of America's colleges and universities have an IT strategic plan. Green (1996b) also reported that a large majority of colleges acquire computer hardware and software with one-time or special budget allocations. Only 28% of the colleges he surveyed reported a budget model for amortization and replacement of hardware and software (Green, 1996b; Hawkins, 1991). Green (1991) concluded that in the future, colleges must develop budget models as part of larger institutional effort to support instruction in order to develop and maintain a vital technology infrastructure.

Information and telecommunication technologies are potentially potent forces to support the transformation of higher education to a learning-centered educational paradigm (Connick, 1996; Grossman, 1987; Heterick, 1993; Mingle & Heydinger, 1994). IT-assisted learning can give students more control over the pace, place, and manner of their learning (Doucette, 1993b). The availability of accessible computers and associated online technologies can move students from passive observers to active participants in the construction of knowledge and contribute to the removal of the content gateway previously controlled by faculty (Green, 1996a; Kozma & Johnston, 1991; Lever, 1993). But these views are not shared by all. The literature reveals varying opinions on the best uses for IT in higher education. Most current instructional applications of IT supplement and reinforce traditional practices (Bates, 1995; Doucette, 1993b; Gilbert, 1994; Willis, 1994a). Traditionalists believe IT should be used to serve, rather than pervert, the best traditions and successes of higher education – which usually means teacher-powerful new force influencing the direction of higher education, it is one of several interrelated components of a system focused on facilitating student learning (Beaudoin, 1990; Connick, 1996). Those who perceive distance education as an appendage of higher education do so because conventional teacher-based classroom-centered lecture methods have been the mainstays of higher education culture for centuries (Ohler, 1989).

In reality, distance education has served thousands of students worldwide for many decades and is an increasingly common activity in American higher education (Beaudoin, 1990; Brey, 1991; Olcott, 1991). Parrot (1995) reports that in 1994, 80% of American community colleges offered some form of distance education. Developments in technology account for much of this recent interest in distance education (Galusha, 1997; Twigg, 1994a). Emerging technologies have increased the potential benefit to adult learners - especially those who are placebound or timebound (Akyurekoglu, 1996; Cropley, 1982; Doucette, 1993b; Reed & Sork, 1990).

While technological developments have greatly expanded educational options in recent years, there is evidence that higher education organizations tend to treat technologies as delivery mechanisms that replicate traditional face-to-face instruction for traditional 18 to 22-year-old campus-based, full-time student populations (Brand, 1995; Catchpole, 1992; Knapper, 1988; Zeller, 1995). At the same time, Connick (1996) reports that the traditional college population of 18 to 21-year-old students constitutes a bare majority (52%) of all college students. He further reports that fewer than 15% of all college credit students fit the profile of the student for which residential campuses were built - young, full-time, and residential students (Connick, 1996).

Higher education practices geared to youth-centered models of higher education have always created a number of difficulties for adult distance education students (Sherritt & Basom, 1996; Tucker, 1995). In general, distance learners are motivated mature adults with a broad range of life and educational experiences who need to be active participants in constructing meaning from instructional activities (Cropley, 1982, Sherron & Boettcher, 1997; Wagner, 1993). Relegating students to the role of relatively passive participants in teacher-centered lecture-discussion mode of instruction is contrary to nearly every principle of optimal settings for adult learning (Guskin, 1994b).

The diversity of learning styles among adult learners means there is no single teaching method that can best serve all students at all times (Cartwright, 1994; Mortimer et al., 1984). Distance education methodologies offer significant opportunities to build on learners' experiences, capacities, and motivations for independent learning (Knapper, 1988). Many educators believe the need for additional asynchronous learning options for students - especially adults - will continue to lead to the creation of nontraditional multimodal learning environments that accommodate disparate and geographically dispersed learners (Paine, 1996).

In just the last few years, distance education has achieved a level of critical interest that signals a shift in perception about distance education from the periphery to the mainstream of instructional effort (Lever-Duffy & Lemke, 1996). Not everyone agrees, however, that distance education is a uniformly beneficial trend in higher education. Some authors still claim distance education has not been proven to be more effective or less expensive than traditional forms of education and should not be viewed as a replacement for traditional classroom instruction, except in times of enrollment pressures and limited resources (Berman, Wyman, & Kunz, 1992; Gilbert, 1996a). Brand (1995) summarizes this position:

> As long as higher education institutions are only one dimension of the opportunities available to students, then their progress is laudable. But if they are instead harbingers of a wholesale shift in higher education, American students stand to lose the most important benefit of a college education: the broad complex of interconnected educational and social experiences that develops good citizenship and strong leadership. (pp. 42-43)

Others counter Brand's (1995) position and propose that when properly designed and implemented, distance education offers an excellent means for colleges to respond to the learning needs of an increasingly diverse adult student population that might otherwise be excluded from higher education (Galusha, 1997; Lever-Duffy & Lemke, 1996; Ohler, 1991; Olcott & Wright, 1995).

Learning Effectiveness

> Distance learning is a viable, effective educational delivery mechanism to address important student, teacher, and systemwide needs in this time of educational reform. (Congress of the United States, 1989, p. 18)

In general, research findings declare that distance education modes of learning in higher education appear to be as effective as on-site, face-to-face instruction (California Postsecondary Education Commission, 1991; Congress of the United States, 1989; Twigg, 1994b). Students do not appear to learn any more at a distance, nor do they appear to learn any less (Berman et al., 1992; Simonson, 1995). Data from meta-analyses of distance education studies point overwhelmingly to the conclusion that teaching and learning at a distance are effective when compared with traditional methods (Moore & Thompson, 1997; Sherron & Boettcher, 1997; Clark & Verduin, 1989). Russell (1997) recently conducted a meta-analysis of 248 research reports, summaries, and papers and reports "no significant differences" in learning achievement in courses delivered by distance education methods compared with courses delivered by traditional instructional methods. Regardless of age, the quality of learning that occurs in distance education settings roughly matches that which is typical of more traditional instructional formats (Johnstone, 1991; NCHEMS, 1996). Yet despite the wealth of research evidence, distance education is perceived by some educators as a second-class alternative to on-campus instruction (Dede, 1996; Galusha, 1997; Olcott & Wright, 1995; Sherron & Boettcher, 1997).

Substantial research has been conducted on the effectiveness of a variety of distance education formats (Krauth, 1996; Moore, 1994). Televised instruction has been found consistently effective when compared with face-to-face instruction (Brey, 1991; Martin & Rainey, 1993; McCleary & Winston, 1989). In studying student learning effectiveness of satellite-delivered courses, Martin and Rainey (1993), and Cheng, Lehman, and Armstrong (1991) found no statistically significant differences on mean posttest scores between a satellite delivered instruction group and a traditional lecture group. In an investigation of telecourse effectiveness Grimes, Krehbiel, Nielsen, and Niss (1989) found that when all factors other than student-teacher contact and institutional support were controlled, off-campus telecourse groups performed better than the on-campus and control groups. In the State of Washington, 82% of the respondents to a 1990 survey of community college telecourse students (including a large majority of students who self-identified as placebound or timebound) indicated telecourses were an effective way to learn (Washington State Board for Community College Education, 1990). Two meta-analyses of telecourse studies found no significant differences in student grade point averages between telecourse and traditional instructional formats (Parrott, 1995).

In studies of interactive video instruction delivery, no significant performance differences were revealed between students receiving instruction via interactive video at remote sites and students receiving instruction in traditional face-to-face formats (Carl & Densmore, 1988; Dean, 1994). An investigation of a variety of instructional modes (traditional lecture, video supported, audio supported, and mixed instructional delivery systems) found no significant performance differences between students engaged in these modes of learning (Beare, 1989). Again in the State of Washington, a survey of faculty who taught via the Washington Higher Education Telecommunication System (WHETS) interactive television system found that faculty reported teaching via the WHETS system to be at least as effective as teaching via traditional classroom environments (Kendall & Oakes, 1992). Studies of other forms of distance education revealed similar results.

Finding no significant differences between conventional face-to-face and technology based instruction is not surprising, since "distance-delivery technology . . . is a mere vehicle or medium of delivery and has little influence over student performance, as long as its characteristics are appropriate to the task at hand" (Willis, 1992, p. 16). Akyurekoglu (1996) concurs and suggests that "effective instructional design and techniques are the crucial elements in student achievement, whether instruction is delivered by these technologies or in traditional ways" (p.27).

Principles of Best Practice

> Educators often rely on an intuitive sense of potential instructional effectiveness and fail to ask basic questions to confirm or reject these intuitive assumptions. (Willis 1992, p. 95)

Although technology is an integral component of distance education, the primary focus of successful distance education programs must be on the instructional needs of students, rather than the technology used to deliver the instruction (Sherry, 1995). To guide development of quality distance education learning experiences, principles of *best practice* have been developed. Two organizations, the Western Cooperative for Educational Telecommunications (WCET) and the American Council on Education (ACE), stand at the forefront in the development of what are widely considered to be models of good practice for distance education.

Prior to the *Principles of Good Practice in Electronically Offered Academic Degree and Certificate Programs* developed by WCET (1997) (see Appendix A), there were no guidelines to review distance education programs or judge the quality of programs offered via telecommunications technologies. The *Principles of Good Practice in Electronically Offered Academic Degree and Certificate Programs* is the outcome of research on Western states' policies for reviewing and approving higher education programs and from extensive interviews and discussions with higher education leaders throughout the West (Krauth, 1996). The resulting WCET guidelines are broad statements that form a flexible foundation for assessing the quality of electronically offered programs and the framework for developing individual implementation policies and practices (Johnstone & Krauth, 1996b; Krauth, 1996; WCET, 1997).

The principles incorporated into *Principles of Good Practice in Electronically Offered Academic Degree and Certificate Programs* cover three primary sections: (a) curriculum and instruction, (b) institutional context and commitment, and (c) evaluation and assessment. Section 2 (institutional context and commitment) is further divided into four subcategories: (a) role and mission, (b) faculty support, (c) resources for learning, and (d) students and student services (WCET, 1997, pp. 6-7). These principles have been adopted by a number of state and regional higher education governing bodies and regulatory agencies, including the *Principles of Good Practice for Academic Degree and Certificate Programs Offered Electronically* (Johnstone & Krauth, 1996b; Southern Region Education Board, 1997). They have also been incorporated into the Commission of Colleges of the Northwest Association of Colleges Accreditation Standards as Standard 2.6: Policy on Distance Delivery of Courses, Certificate, and Degree Programs (Commission of Colleges, 1996, pp. 44-46).

The American Council on Education and the Alliance: An Association for Alternative Programs for Adults developed *Guiding Principles for Distance Learning in a Learning Society* (ACE, 1996a) to formulate principles and recommend policies and practices on the development, delivery, and assessment of formal distance learning opportunities (ACE, 1996b). The ACE also produced the *Distance Learning Evaluation Guide* (ACE, 1996a) as a tool to ensure comprehensive and equitable evaluation of distance education programs and services. The *Distance Learning Evaluation Guide* (ACE, 1996a) provides guidelines for seven major categories of distance education practice: (a) learning design, (b) learning objectives and outcomes, (c) learning materials, (d) technology, (e) learner support, (f) organizational commitment, and (g) subject.

Resistance to Distance Education

> Many people will resist change, any change, and the more significant the change, the greater the resistance. For many, probably most, change is difficult, painful, and an uncertain leap into an unknown future. . . . The problems we are facing are not the result of inappropriate resistance by faculty or administrators; rather, they are systemic in nature. People in colleges and universities – faculty, administrators, students, and even trustees – act the way they do because the institutional systems of American higher education have supported and rewarded their present behaviors. In addition, creating alternative systems of rewards for faculty and students, or alternative uses of faculty time, or different approaches to facilitating student learning, have been overtly or covertly discouraged at all institutional levels by the organizational structures and systems. (Guskin, 1996, pp. 29-30)

Significant changes in higher education are almost always perceived as threatening and are met by strong initial resistance (Penrod & Dolence, 1992). Educators, as well as the culture of higher education itself, appear to resist change. They have a tremendous amount of time and energy invested in the existing institution-centered teaching-focused paradigm and the rules that govern it (Boggs, 1993; Cummings, 1995). Administrators are hesitant to abandon the hierarchical processes they have mastered over time. They fear the collaborative structures inherent in distance education may undermine their autonomy and authority (Guskin, 1996). State policy and governing bodies may reinforce resistance by negotiating barriers to protect public in-state colleges from private college or out-of-state competition (Mingle & Heydinger, 1994). Students, too, may be resistant to distance education modalities, because they may be fearful or unwilling to take greater responsibility for their learning in a nonteacher-centered environment (Knapper, 1988).

According to Batson and Bass (1996), the chief resistance factor for faculty is their tendency to mistakenly take the current teaching paradigm as the ultimate objective of higher education. Faculty are prejudiced by their experiences that are limited to traditional higher education settings and by their limited exposure to alternative educational theory and models (Knapper, 1988). Faculty perceive their role in traditional terms and tend to hold on to older, more comfortable models of instruction (Blumhardt & Cross, 1996; Brown & Duguid, 1996; Cummings, 1995). Faculty biases against nontraditional instructional practices are reflected in faculty statements such as: (a) "I'm not sure you can even call it teaching if the faculty member and the student aren't in the same room" (Ehrmann, 1995a, p. B1); (b) "We all know that no learning takes place unless a faculty member is in the room"

(Connick, 1996, p. 6); and (c) "We've done things this way for 500 years; why should we change now?" (Brown & Duguid, 1996, p. 10).

Other factors may generate resistance toward the adoption of technology and innovative learning strategies in higher education. Some faculty fear a loss of control over the teaching/learning environment (Beaudoin, 1990; Collins, 1990; Kanter, 1985; NCHEMS, 1996). Since the teaching experiences of most faculty have been with younger, more traditional student populations, many faculty are unaware of alternative learning theories. Consequently, they display a bias in favor of serving traditional students in traditional campus settings (Miller & Clouse, 1994; Sherritt, 1992).

Some faculty believe that distance education teaching is professionally and personally less rewarding and offers fewer opportunities for career advancement than traditional instructional practices (Dillon & Walsh, 1992). At the same time many faculty believe the work associated with the development and delivery of distance education courses to be greater than more traditional forms of instruction (Ericksen, 1977; Kanter, 1985; Miller & Clouse, 1994; Olcott & Wright, 1995). A lack of incentives and rewards to teach by distance education provides little motivation for faculty to overcome the perceived additional workload (Holloway & Ohler, 1995). That perspective is supported by Green (1996b) who found comparatively few colleges formally recognized or rewarded faculty efforts to adopt instructional innovation or integrate technology-related methodologies into instructional practices.

Clark (1993) found that public higher education faculty receptivity to distance education is slightly to moderately positive. He further observed that support for expanded access is mixed with concerns regarding instructional effectiveness and the quality of student-teacher and student-student interaction. That concern for the quality of learning by distance education and the quality of distance education interactions with students is reinforced by a number of authors (Burke, 1994; Lewis & Wall, 1988; Mingle & Heydinger, 1994; Monaghan, 1995; Olcott & Wright, 1995). Some faculty assume traditional education is an intimate (and thus good) learning experience, while distance education is an isolating (and thus poor) alternative that is acceptable only when there is no other choice available to students (Ehrmann, 1995b).

The lack of instructional support structures and faculty development programs may contribute to faculty resistance to distance education, especially those that involve new technologies (Galusha, 1997; Smallen, 1993). Only 54.6% of American colleges have some form of resource center designed to support the use of technology in instruction (Green, 1996b). A resulting technical and instruction support void increases the level of faculty resistance. Without a support framework, faculty are frequently dissatisfied with their experiences with technology and distance education efforts (Dede, 1990; Lewis & Wall, 1988). As a result, attempts to incorporate innovative methods in instruction are accompanied with frustrations that result from attempts to use new technologies or methodologies that prove to be unreliable or difficult to master (Burke, 1994; Penrod & Dolence, 1992).

Distance Education Development in the Washington State Community and Technical Colleges

Regardless of the general resistance of higher education to change and distance education, Washington State has a strong history of innovation in delivering instructional programs and services (see Appendix B). Beginning with Centralia College in 1925, community and technical colleges were established in rural locations throughout the state to provide access to higher education for students who were unable to relocate to one of the State's regional 4-year colleges (Washington State Board for Community and Technical Colleges, 1996b). As populations expanded in the 1960s, community and technical colleges were established in urban areas to meet the growing demands for higher education in those areas (see Appendix C). Both rural and urban community colleges, in turn, extended access by establishing satellite campuses within their districts. These efforts continue today through the use of communication technologies and distance education methodologies. In looking to the future, Washington State views distance education not only as a means of access, but also as a teaching-assisted, learning-based system that allows students more access to instructional resources and control of their learning environment (Washington State Board for Community and Technical Colleges, 1996d).

Even before the creation of the Washington State Community and Technical College System in 1967, individual colleges offered distance education in the form of correspondence courses (Washington State Board for Community and Technical Colleges, 1996d). As video delivery options expanded during the

1970s, colleges delivered video-based courses to students in their homes and worksites via video tapes, public television broadcasts, and commercial television cable systems (Talbott, 1997a). In 1977, the Washington Community College Instructional Commission authorized 12 community colleges to form a consortium to coordinate telecourse offerings among member colleges (Washington State Board for Community College Education, 1990).

Recognizing the potential benefit of video delivered courses, the Washington Legislature passed the Higher Education Technology Act in 1982 to form the Washington Education Telecommunication System (WETS). The purpose of WETS was to develop a single two-way video microwave system to interconnect Washington State University and University of Washington sites in Pullman, Seattle, Spokane, Richland, and Vancouver (Washington State University, 1995). The WETS system, later renamed the Washington Higher Education Telecommunication System (WHETS), became operational in 1985 and later included community college sites (Washington State University, 1995).

In 1985, an Annenberg Grant was awarded to Bellevue Community College to fund the Puget Sound Telecommunication Center. The Center received free access to the full library of Annenberg video courses and provided administrative, technical, and logistical support to the Washington State community colleges for instructional uses of telecommunications (Washington State Board for Community College Education, 1990). When Annenberg support ended in 1988, the Washington State Community College System allocated funds to support the Center and changed its name to the Telecommunication Center for the Washington Community Colleges (Washington State Board for Community College Education, 1990). Community college telecourse usage expanded steadily as evidenced by the 3,000 students (366 FTES) served by telecourses during 1988-1989 (Washington State Board for Community College Education, 1990).

In 1989 the Office of the Superintendent of Public Instruction, the Higher Education Coordinating Board, the Department of Community Development, and the Department of Information Services developed a proposal to share video telecommunications resources across the state. The Washington Legislature subsequently authorized $1 million for a pilot demonstration project commonly known as the "Triad Plan" (Washington State Department of Information Services, 1996a). Through Triad funding, satellite downlink equipment was purchased for all community colleges. Spokane Falls, Clark, and Bellevue Community Colleges were designated for origination of televised programs (Washington State Board for Community College Education, 1990). The CTC was charged with operational responsibility for the Triad project. When the Triad pilot project ended in 1993, the CTC transferred operational responsibility for the Triad project to the Department of Information Services. The name of the Triad project was subsequently changed to Washington Interactive Television (WIT) (Washington Department of Information Services, 1996a).

In 1991 the Washington Legislature amended the Community College Act of 1967 to combine Washington's 27 community colleges and 5 technical colleges into a single, comprehensive community and technical college system

(Washington State Board for Community and Technical Colleges, 1996b). During that same year, the Telecommunication Center for the Washington Community Colleges merged with the Washington Community College Computing Consortium (WCCCC) to form the Communications Technology Center (CTC). The mission of the CTC was to provide communication technology services to the Washington State Board for Community and Technical Colleges and all Washington State community and technical colleges (Communications Technology Center, 1997). In support of that mission, an educational technology and telecommunications unit of the CTC was formed in 1991 to provide coordination and leadership for video telecommunications and distance education for Washington's community and technical colleges.

A regional approach for the delivery of video-based courses was achieved in 1995 with the formation of the Northwest Telecommunications Network (NWTN) - a consortium of 16 community and technology colleges in the Puget Sound corridor. NWTN's goal was to work with city and county governments and commercial cable television systems to create a coordinated, seamless telecourse delivery system across political and institutional boundaries in Northwest Washington.

With the emergence of the Internet as a tool of distance education, the CTC implemented a Title III pilot project to provide Internet access for Highline Community College, Skagit Valley College, and South Seattle Community College. All community and technical colleges were subsequently connected to the Internet. As interest in the Internet grew, the Internet Information Group (IIG) was formed in 1994 to advise the CTC on access, policies, and related issues related to the use of the Internet.

Changes in distance education organization structures paralleled advances in technology infrastructures. Prior to 1977, college telecourse coordinators met informally to address telecourse distance education issues (Washington State Board for Community College Education, 1990). With the formation of the Telecommunication Center for the Washington Community Colleges, a statewide telecommunications coordinator was hired and the Video Telecommunications User Group (VTUG) was formed as an advisory body to the Telecommunication Center (Washington State Board for Community College Education, 1990). The VTUG mission quickly expanded to include additional, emerging forms of distance education and the name of VTUG was changed in 1995 to the Coordinators of Distance Education (CODE) to better reflect their expanded roles and responsibilities.

During the mid-1990s, technology-based distance education achieved high levels of visibility in legislative arenas. The 1995 Washington State Legislature committed $17.8 million for a community and technical college Educational Technology Initiative (ETI). ETI funds were allocated to the CTC for distribution to the community and technical colleges for: (a) technology infrastructure; (b) instructional technology projects; (c) video telecommunications; and (d) planning, consultation, and wide-area network planning (Washington State Board for Community and Technical Colleges, 1996d). A number of colleges used ETI funds to acquire or upgrade computers, data networks, and video technology infrastructures in anticipation of the growing demand for distance education courses.

Following successful implementation of the ETI, the Washington State Board for Community and Technical Colleges initiated a comprehensive Educational Technology Strategic Planning Process (ETSPP). Underscoring the importance of educational technology and distance education, the vision framing the ETSPP was:

> To provide educational technology that will enable faculty and staff to deliver instruction and services in efficient and effective ways to an increasingly numerous and diverse student clientele of lifelong learners through a learner-centered system that allows students to seek knowledge and information independently, engage in cooperative problem solving, and achieve educational goals that will prepare them for the world in which they will live and work. (Washington State Board for Community and Technical Colleges, 1996d, p. 3)

The ETSPP vision was grounded in three desired outcomes that were expected to result from development and implementation of a comprehensive educational technology strategy. Those three outcomes were: (a) expanding access to educational programs, (b) improving quality and value of learning to the student, and (c) increasing efficiency and productivity to increase educational results for the colleges individually and the Washington State Community and Technical College System as a whole (Washington State Board for Community and Technical Colleges, 1996d).

Distance education took a political turn in June of 1995 when the Western Governors Association conceived the concept of the Western Governors University (Western Governors University [WGU], 1997b). The WGU was proposed as an innovative learning system based on expanded communication technology-based education opportunities and competency-based credentialing (Western Governors University, 1996, 1997a). The formation of the WGU escalated interest in distance education in Washington State.

By 1996, there was a growing recognition that "distance education and other technological applications may be a cost-effective way to provide quality educational services to students who, given the demand on limited resources, might miss them otherwise" (Washington State Department of Information Services, 1996b, p. 1). The Washington State Board for Community and Technical Colleges adopted a resolution to "use distance learning to expand access to college courses and programs" and to "develop a system wide consortium for developing Internet courses" (Washington State Board for Community and Technical Colleges, 1996c, tab 6). The 1996 Washington State Legislature authorized $42.3 million to create the K-20 Educational Telecommunications Network (K-20). The purpose of the K-20 initiative is to develop and implement a technical infrastructure that provides citizen access to "quality primary, secondary, and postsecondary courses and degree programs statewide through distance education" (Washington State Department of Information Services, 1996d, p. 1). The principles guiding the K-20 initiative are to: (a) increase access, (b) increase efficiency, (c) increase quality, (d) enhance partnerships, and (e) improve student learning (Washington State Department of Information Services, 1996c). The 1996 Washington State Legislature complemented the K-20 infrastructure funding by allocating $2 million for

Innovation Grants to support pilot educational technology-based instructional projects designed to improve student access and success through innovative and collaborative methods (Washington State Board for Community and Technical Colleges, 1996c).

As evidence of the growing importance and integration of technology and distance education at the state level, the Washington State Board for Community and Technical Colleges proposed $43.2 million for educational technology and distance education in their 1997-1999 operating budget request (Washington State Board for Community and Technical Colleges, 1996a). This proposal was based on the belief that technology is:

> An essential tool to expand access to courses and programs beyond time and place barriers, improve the quality of student learning and student retention, and increase the efficiency with which college services are delivered . . . access to higher education today is no longer limited by the location of building, size of classrooms, or the schedule of classes. College courses and programs can be made available any place and any time through technology, expanding access to underserved communities and underserved populations. (Washington State Board for Community and Technical Colleges, 1996a, p. 49)

Five targeted areas were specifically identified to improve: (a) student access to courses and programs, (b) student access to learning resources, (c) quality and efficiency of student learning, (d) student progress, and (e) network technical support and training (Washington State Board for Community and Technical Colleges, 1996a). In justifying the request, the Washington State Board for Community and Technical Colleges concluded that distance education is a way to advance these goals, because it "extends the reach of campus-based faculty to students unable to travel to college campuses due to location or time restrictions" (Washington State Board for Community and Technical Colleges, 1996a, p. 50).

During 1997, distance education became an escalating topic of interest within the governance structure of the Washington State Community and Technical College System. The Washington Association of Community and Technical Colleges (WACTC) (presidents of all community and technical colleges) approved a distance education vision statement and the Instruction Commission (IC) (chief academic officers of the Washington state community and technical colleges) formed a standing subcommittee to investigate distance education issues. The IC further proposed creation of the Distance Learning Council (as the successor to CODE) to address both the operational and instructional policy issues associated with distance education in the Washington State community and technical colleges.

Presidential-level commitments to distance education were further manifested in 1997 when WACTC approved the formation of the Washington State Community and Technical Colleges "Online College" Consortium. WACTC authorized $530,000 to support a pilot project to develop and maintain 20 online courses for delivery the 1998-1999 academic year. Coordination responsibility for the Online Consortium was delegated to the Instruction Commission and an Online Consortium Advisory Board was established to serve as the clearinghouse for the project and to provide communication linkages with constituent groups. WACTC also approved a collaborative partnership with Washington's 4-year colleges and universities. That partnership, the Washington Higher Education

Distance Education Consortium (WHEDEC), was formed to coordinate statewide higher education distance education efforts. WHEDEC's initial objectives include: (a) development of a shared online catalog of courses and degrees, (b) development of shared instructional materials, (c) development of a pool of experts to assist in course development, and (d) statewide training for faculty and staff (Talbott, 1997b).

As Washington's interest in distance education grew, so did the need for data to analyze systemwide distance education efforts. Baker (1995) conducted a comprehensive inventory of 1994-1995 distance education activities in the Washington State community and technical colleges. This study established a baseline of distance education activity for the system. The survey was subsequently repeated to gather 1995-1996 and 1996-1997 data to assess distance education growth and patterns over time. Results from those surveys are compiled in Table 1 (Baker, 1995, 1996, 1997).

TABLE 1

1994-1995 THROUGH 1996-1997 DISTANCE EDUCATION ACTIVITY IN THE WASHINGTON STATE COMMUNITY AND TECHNICAL COLLEGES

Year	Participating Colleges	Classes	Seatcount	Annualized FTES
1994-1995	29	1,581	23,232	2,342
1995-1996	30	2,371	25,735	2,505
1996-1997	27	2,286	25,926	2,706

Summary

Aided by advanced in technology, the information age is developing at a rapid and escalating pace throughout America and around the world. Higher education, however, is slow to change, since its values are deeply rooted in traditions derived from successes in providing educational services designed to meet the needs of past eras. The practices and policies that served well in the past are no longer adequate to meet the needs of students, and society, in the information age of the 21st century.

To meet the needs of the information age, community and technical colleges are beginning to transform themselves into learning-centered, rather than teaching centered organizations. Attempts to overcoming the inertia of tradition in academia are met with resistance from individuals, organizations, and practices with vested interests in preserving the status quo. To succeed, transformation leaders will be required to develop vision and define directions to overcome personal and institutional comforts in order to provide the learning environments and opportunities required by lifelong learners.

The literature reveals that when properly designed and executed, distance education can provide high-quality learning experiences (Clark & Verduin, 1989; Ehrmann, 1995b; Willis, 1992). In addition to being an instructional strategy, distance education has the capacity to serve as a catalyst for more systemic teaching and learning changes in higher education (Moore & Thompson, 1997; Wagner, 1993; Willis, 1994b).

The Washington State Community and Technical College System is developing a comprehensive distance education strategy that assimilates financial, operational, technical, political, policy, and organizational considerations. That strategy is being operationalized in the form of: (a) funding for ETI, K-20 Network, "Online Consortium," and Innovation Grant initiatives; (b) an agreement on a systemwide distance education vision; (c) the creation of Distance Learning Council; and (d) a WHEDEC partnership with Washington's 4-year colleges and universities. The actions of the Washington State Community and Technology College System and the Washington State Legislature represent a growing awareness of distance education as a system of interactive and interdependent components.

CHAPTER III

RESEARCH METHODOLOGY

> Systems research provides four critical types of information that may not be readily attainable through the use of other research methods. They are: (1) how one part of the system affects the other parts and is affected by the other parts; (2) how each part as well as all parts, collectively, help or hinder the system achieve its goals; (3) how the system interacts with its social context (environment); and (d) what alternative policies move the system toward its goals in the future. (Saba & Twitchell, 1988, pp. 10-11)

Research methodology refers to the investigator's strategy for gathering and analyzing data to achieve the research objectives (Lincoln & Guba, 1985). The choice of methodology is shaped by the researcher's assumptions, interests, and purposes (Taylor & Bogdan, 1984). This study was undertaken to further understand distance education factor interdependencies within the Washington State Community and Technical College System. Due to its emphasis on the generation of theory from data in their natural settings, a constant comparative grounded theory qualitative (naturalistic) methodology was selected as the research framework for this investigation (Glaser & Strauss, 1967). Through constant comparison of data, emerging conceptual categories, connections, linkages, and relationships within and between distance education factors were revealed.

Naturalistic Paradigm

> Naturalistic inquiry is defined not at the level of *method*, but at the level of *paradigm*. (Lincoln & Guba, 1985, p. 250)

A *paradigm* is an individual's set of basic beliefs, accepted on faith, that represents a worldview. It defines the holder's perception of the nature of the "world," the individual's place in it, and the range of possible relationships within that world (Guba & Lincoln, 1994). A paradigm is the structure through which the thought process occurs and represents a distillation of what people think about their world and how they act in relationship with it (Barr, 1995). The researcher's paradigm guided this investigation and selection of research methods. The naturalistic paradigm that underscored this study was grounded in a set of five axioms. These axioms, listed in Table 2, provided the methodological guidelines for this qualitative inquiry (Lincoln & Guba, 1985).

TABLE 2

AXIOMS OF NATURALISTIC PARADIGM FOR INQUIRY

Axiom 1	Realities are multiple, constructed, and holistic
Axiom 2	Knower and known are interactive and inseparable
Axiom 3	Only time- and context-bound working hypotheses are possible
Axiom 4	All entities are in a state of mutual simultaneous shaping, making it impossible to distinguish causes from effects
Axiom 5	Inquiry is value bound

Note: Adapted from Lincoln, R., & Guba, M. (1985). *Naturalistic inquiry*. Newbury Park, CA: SAGE Publications, p. 37.

Lincoln and Guba (1985) report that Schwartz and Ogilvy (1979) studied paradigms of emerging discipline-based world views and found a "conceptual resonance between the major axioms of naturalism and the major basic beliefs that characterize emergent, vanguard thinking in virtually every major discipline or discipline-like area of scholarly endeavor" (p. 65). Lincoln and Guba (1985) concluded that the naturalistic paradigm "provides a better degree of fit with substantive paradigms in the areas of social/behavioral science" (p. 66). They further concluded that for inquiry at the forefront of disciplines, naturalistic paradigm was "*the* paradigm of choice, the paradigm that provides the best fit to virtually all phenomena" (p. 50).

Theoretical Framework

> A common misperception among educators who are not familiar with a systems approach is that it is possible to benefit from introducing technology into education without doing anything to change the other ways in which education is currently organized. (Moore & Kearsley, 1996, p. 6)

The purpose of this study was to identify and describe factors and patterns of factors that foster or impede distance education. Given the assumption that distance education was a system of interacting and interdependent elements, general system theory (Ackoff, 1995; Bertalanffy, 1968) was chosen as the guiding framework for this study. The tenets of general system theory suggested that a greater understanding of a phenomenon would emerge from: (a) identifying and analyzing elements within the system; (b) synthesizing their patterns, interactions, and roles within the system; and (c) understanding the role of the system within more encompassing systems (Ackoff, 1995).

Qualitative Research

Qualitative (naturalistic) inquiry refers to research that produces descriptive data - people's own written or spoken words and observable behavior (Taylor & Bogdan, 1984). It produces findings by means other than quantification or statistical procedures (Strauss & Corbin, 1990). Qualitative research assumes the existence of many realities constructed by individuals in interaction with their natural environments (Merriam & Simpson, 1995).

The focus of this qualitative inquiry was to better understand the system of distance education, rather than to pass judgement on its value (Bogdan & Biklen, 1992; Merriam & Simpson, 1995; Stainback & Stainback, 1988). Since context was heavily implicated in developing that understanding, distance education must be viewed in holistic terms (Stainback & Stainback, 1988; Borg, Gall, & Gall, 1993; Fraenkel & Wallen, 1993). To foster development of that holistic perspective, qualitative methodology provided the framework to gather a broad range and variety of interrelated data into a meaningful whole to gain an understanding of how distance education operated, how it evolved, and why it did or did not work (Stainback & Stainback, 1988). The qualitative research strategy selected for this study took the form of multiple site/source investigations involving a variety of settings, people, events, and documents (Stainback & Stainback, 1988). The research procedures for this investigation were flexible, exploratory, and discovery oriented to generate theory from an investigation of relationships, activities, situations, or materials in totality and in context in their natural settings (Stainback & Stainback, 1988; Fraenkel & Wallen, 1993; Lincoln & Guba, 1985).

Grounded Theory Methodology

Grounded theory methodology, perhaps the most widely employed interpretive research strategy in the social sciences, is a general methodology for developing effective theory that is grounded in data systematically gathered from natural settings and continuously analyzed (Denzin & Lincoln, 1994). Theory evolves throughout the research project from continuous interplay between analysis and data collection (Strauss & Corbin, 1994).

The grounded theory methodology adopted for this study was a necessary consequence of the naturalistic paradigm that underscored this investigation. The research methodology for this study was designed to be an open-ended guide to accommodate the many realities of distance education encountered in the field (Lincoln & Guba, 1985). It fostered development of "conceptually dense" theory that was rich in concepts, relationships, linkages, and patterns (Strauss, 1987; Strauss & Corbin, 1994). It was selected for this study, because it yielded a theory that would fit the situation being researched, and work when put into use. "Fit" means that the categories must be readily (not forcibly) applicable to and indicated by the data under study and "work" means that the categories must be meaningfully relevant to and be able to explain the behavior under study (Glaser & Strauss, 1967).

Constant Comparative Data Analysis

Constant comparative data analysis is the basic procedure in grounded theory methodology (Merriam & Simpson, 1995; Strauss & Corbin, 1994). It develops well-constructed theory through a detailed grounding by systematic and intensive constant comparative analysis of extensively collected and coded data from notes, interviews, or other documents (Strauss, 1987). "The focus of [constant comparative] analysis in *not* merely on collecting or ordering a mass of data, but on *organizing many ideas* which have emerged from analysis of the data" (Strauss, 1987, pp. 22-23).

Constant comparative data analysis procedures were incorporated into this study (see Figure 2). Data were collected and continuously compared to refine conceptual categories of distance education factors. Distance education factor patterns were discovered. Relationships among the patterns were explored and integrated into a coherent strategy (Strauss, 1987; Taylor & Bogdan, 1984). Throughout this study, the use of constant comparative theory development placed a high emphasis on theory as process - as an ever-developing entity, not as a perfected product (Glaser & Strauss, 1967).

Research Design

Overview

> Within a naturalistic paradigm, designs must be emergent rather than preordinate; because meaning is determined by context to such a great extent, because the existence of multiple realities constrains the development of a design based on only one (the investigator's) construction; because what will be learned at a site is always dependent on the interaction between investigator and context, and the *interaction* is also not fully predictable; and because the nature of mutual shaping cannot be known until they are witnessed. (Lincoln & Guba, 1985, p. 208)

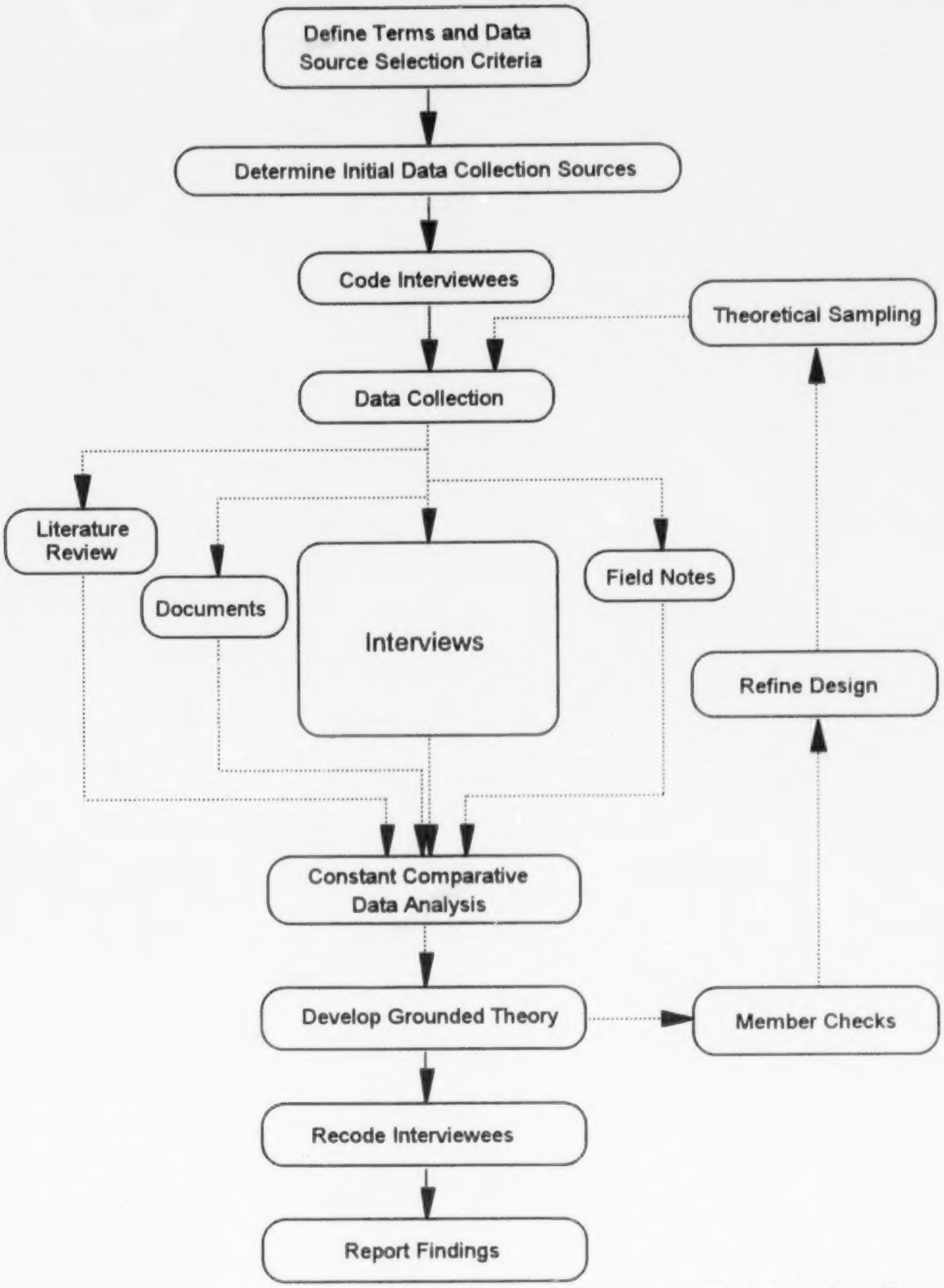
Define Terms and Data Source Selection Criteria
Determine Initial Data Collection Sources
Code Interviewees
Theoretical Sampling
Data Collection
Literature Review
Documents
Interviews
Field Notes
Refine Design
Constant Comparative Data Analysis
Develop Grounded Theory
Member Checks
Recode Interviewees
Report Findings

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FIGURE 2. RESEARCH DESIGN FRAMEWORK

Research methodology was determined by the purpose of this study, the nature of the research questions, and the skills and resources available to this investigator (Morse, 1994). As data were collected and analyzed, themes and patterns emerged in context. These themes and patterns became the focus of additional data collection and analysis (Borg et al., 1993). Specific research questions, hypotheses, participants, design, procedures, and data collection methods were integrated into the research methodology to assure any resulting theory was grounded in data from the *real* world (Stainback & Stainback, 1988). It was critical that qualitative methodology support, rather than supersede, the interpretive, intuitive thought processes of the researcher (Stainback & Stainback, 1988).

Simultaneous collection, coding, and analysis of data is the underlying operation of constant comparative data analysis. The generation of theory, coupled with the notion of theory as process, requires that all three operations be conducted concurrently throughout the research project (Glaser & Strauss, 1967). Constant comparative methodology incorporates a number of research strategies, such as theoretical sampling and coding paradigms, in making constant data comparisons to develop conceptual density (Strauss, 1987).

Distance education is a system that should be studied by qualitative methods to develop a holistic view of the phenomenon (Moore & Kearsley, 1996; Jeffries, 1996). The guiding research design for this investigation was based on the incorporation of theoretical sampling of multiple site/source data collected in their natural settings from interviews, participant observer field notes, and records and documents. Data were analyzed via constant-comparative methods with assistance from NUD-IST, a computer software program. Further theoretical sampling disclosed unanticipated sources of data, including informal conversations with past and present members of the Washington State community and technical college distance education community. An overview of the research process for this study is illustrated in Figure 2.

Role of the Researcher

The researcher was the primary instrument for data collection and analysis in this qualitative study, because humans are the best, perhaps only, instruments capable of grasping the meaning and variety of realities encountered in conducting research in natural settings (Borg et al., 1993; Lincoln & Guba, 1985; Merriam & Simpson, 1995; Stainback & Stainback, 1988). The human instrument builds upon his or her tacit knowledge and uses methods that are appropriate to human inquiry: interviews, observations, and document analysis (Lincoln & Guba, 1985; Stainback & Stainback, 1988).

In this study, the researcher's background included firsthand leadership and participatory experiences with distance education in the Washington State Community and Technical College System. Through active field participation and previous research on distance education, the researcher gained a broad overview and deep awareness of distance education activities and issues across the Washington State Community and Technical College System.

The researcher's distance education leadership experience in an adjacent state helped triangulate his perspective of distance education in a broader context. The depth and breadth of experiential, interpersonal, observational, and research experiences of the investigator, together with a methodology grounded in naturally occurring settings, combined for rich development of theory toward greater understanding of distance education in the environment of the Washington State Community and Technical College System.

Selection of Data Sources and Participants

Data sampling in qualitative studies is determined according to the needs of the study, not by external criteria, such as random selection or demographic reflection of the general population (Morse, 1994). In this study, emerging theory controlled the data collection process and determined the criteria for the researcher's "theoretical sampling." Glaser and Strauss (1967) describe *theoretical sampling* as the "process of data collection for generating theory whereby the analyst jointly collects, codes, and analyzes his data and decides what data to collect next and where to find them, in order to develop his theory as it emerges" (Glaser, 1978, p. 36). This iterative phenomenon is represented in Figure 2 by the dashed connecting lines between methodology components.

The basic question in theoretical sampling methodology is: *What* individuals or groups, events, and activities should be explored *next* in data collection - and for what theoretical purpose (Glaser & Strauss, 1967; Strauss, 1987)? Throughout this research project, new areas of study were explored according to their potential for helping to expand or refine concepts and theory that were previously developed (Taylor & Bogdan, 1984). The contributing *value* of an area to develop theoretical insights, more than the *number* of areas, guided theoretical sampling for this study (Taylor & Bogdan).

For this study, 5 Washington State Community and Technical Colleges were selected for initial inquiry from data reported by Baker (1995, 1996). Community college categories were defined by the proximity of the college to a major Washington metropolitan area (Everett, Seattle, Tacoma, Vancouver, Spokane). A community college was classified as *urban* if it was located within 25 miles of the major metropolitan areas of Everett, Seattle, Spokane, Tacoma, and Vancouver. A community college was classified as *rural* if it was located more than 25 miles away from the major metropolitan areas of Everett, Seattle, Spokane, Tacoma, and Vancouver. Community and technical colleges were also categorized by their experience with distance education. A community college with a *qualifying distance education history* was defined as one that demonstrated the availability of two or more implementations of distance education (Baker, 1995, 1996) for three or more terms for each of the years 1994-1995 and 1995-1996. Given the more esoteric focus of technical colleges and their recent integration into the Washington State Community and Technical College System, a different criteria was used to categorize technical college distance education history. A technical college *distance education history* was defined as the availability of at least one implementation of distance education (Baker, 1995, 1996) for three or more terms for each of the years 1994-1995 and 1995-1996. The selection criteria for the 5 participating colleges are listed in Table 3.

TABLE 3

COLLEGE SELECTION CRITERIA

Quantity	College Type	College Setting	Distance Education History
1	Community	Urban	Qualifying
1	Community	Urban	Nonqualifying
1	Community	Rural	Qualifying
1	Community	Rural	Nonqualifying
1	Technical	N/A	Baseline

These selection criteria were purposefully included in the research design to triangulate perspectives of members from urban community colleges, rural community colleges, and technical colleges from various positions on the Washington State community and technical college distance education participant/nonparticipant continuum.

To obtain a more holistic perspective of distance education in these varied environments, inperson interviews were conducted with one administrator and one distance education practitioner from each participating college. Individuals were selected based on the professional judgement of the researcher and recommendations from college and Washington State Community and Technical College System administrative staff. Criteria for selecting individuals included: a) personal involvement with distance education within their college and within the Washington State Community and Technical College System; b) an awareness of distance education developments nationally within the Washington State

Community and Technical College System and within their college; and c) their length and depth of educational experience in Washington higher education.

Data Collection

Bodgan and Biklen (1992) define *data* as "the rough materials researchers collect from the world they are studying; they are the particulars that form the basis of analysis" (p. 106). In this grounded theory study, tape-recorded interviews and observations were the primary means of data collection, but documents of all kinds were also included (Bogdan & Biklen, 1992; Strauss & Corbin, 1994; Morse, 1994). As with most qualitative studies, this investigation included data from multiple sites and sources to develop grounded theory (Bogdan & Biklen, 1992; Strauss & Corbin, 1994). Data for this research inquiry included inperson unstructured interviews, participant observer field notes of phenomena in their natural settings, and official/unofficial state agency and organization documents (see Figure 2). Constant comparative methodologies were used to analyze that data (Bogdan & Biklen, 1992).

Interviews

Interviews hold a prominent place among research methods in the social and behavioral sciences and are one of the most common and powerful ways to understand human interaction (Mishler, 1986; Fontana & Frey, 1994). As noted in Figure 2, interviewing was the central and most important data collection technique incorporated into this study. Unstructured interviews were selected as the primary data sources for this study, since they provided the most latitude for discovery (Fetterman, 1989; Fontana & Frey, 1994). Unstructured open-ended interviews allowed the participants to answer from their own frame of reference, rather than from one structured by prearranged questions (Stainback & Stainback, 1988). Research participants were engaged in conversations in natural, unobtrusive, and nonthreatening interviews modeled as conversations between trusting partners, rather than a formal question-and-answer exchange between researcher and respondent (Bogdan & Biklen, 1992; Taylor & Bogdan, 1984).

Seidman (1991) suggests a three-phase approach to interviewing: (a) establish rapport with the participant; (b) focus on the details of the participant's experience; and (c) engage the participant in reflecting on the meaning of the experience. To assure key topics were explored with participants in this study, an interview guide is recommended to help focus the interviews (Taylor & Bogdan, 1984).

In this study the researcher adopted a modified form of Seidman's (1991) three-phase approach to interviewing. Interviews were scheduled and confirmed with participants in advance of the meeting. Seven of the 10 interview participants were well acquainted with the researcher from previous professional activities, so rapport-building was unnecessary. The remaining 3 participants knew the researcher by reputation. The researcher established rapport with these 3 people during preinterview telephone conversations. Since rapport-building was unnecessary, phases two and three of Seidman's model were combined, in sequence, into a single interview session.

Participants received the Informed Consent Form (see Appendix D) and agreed to participate in this study. Unstructured open-ended interviews were conducted with the participants in their natural environments - generally in an office setting. Initial inperson interviews were scheduled for 90 minutes. An interview guide (see Appendix E) was developed and used by the researcher as a memory aid. Follow-up interviews were conducted through inperson conversations, electronic mail exchanges, and telephone conversations with the original interviewees. The follow-up activities clarified earlier conversations or solicited additional data on emerging themes. Data from interviews, document analysis, literature searches, participant observer field notes, and member checks, and interviewee referrals suggested additional people for interviews. Theoretical sampling techniques were used to further expanded the sources of data throughout the investigation. In addition to gaining greater depth of understanding of distance education factors, factor patterns, and relationships, the additional data sources were useful in determining the existence or absence of factor patterns and relationships not previously discovered during the study.

Participant Field Observations

Participant field observation refers to research involving interaction between the researcher and participants in the participant's natural setting during which data are systematically and unobtrusively collected (Taylor & Bogdan, 1984). The researcher for this investigation was extensively involved with Washington State educational technology and distance education initiatives for 5 years. These initiatives, grounded in the naturalistic paradigm, included instruction-oriented faculty training in the use of distance education technologies and methodologies and leadership institutes to develop a contextual systemic vision of technology and distance education. By moving into a variety of participant roles in the participant's natural setting, the researcher gained first-hand experience with participants, and their *world*, in a naturally existing state (Taylor & Bogdan, 1984).

The researcher also observed natural field settings from leadership positions. As the founding chair of the Internet Information Group and the CTC Technology Council, this investigator observed internal interactions germane to those bodies as well as issues and interactions at a broader system level. The researcher's system-level participation included membership in statewide educational technology and distance education strategic and implementation planning processes. All of these opportunities for observation, in their natural settings, enhanced the researcher's awareness and perspectives of distance education across the Washington State Community and Technical College System.

Participant observation field notes were systematically recorded through a variety of mechanisms. Notes were made of organizational meetings and personal communications with participants in the field. In addition to guiding the interviews, the interview guides were used to record the researcher's observations and insights. Document memos and index node memos were captured by the NUD-IST software program to aid in constant comparative analysis of the data.

Documents and Records

A *record* is "any written or recorded statement prepared by or for an individual or organization for the purpose of *attesting to an event* or *providing an accounting*" (Lincoln & Guba, 1985, p. 277). A *document* is "any written or recorded material other than a record that was not prepared specifically in response to a request from the inquirer" (Lincoln & Guba, 1985, p. 277). Lincoln and Guba (1985) argue documents and records are singularly useful sources of information in qualitative studies, because they are readily available, stable, and rich sources of information that are contextually relevant and grounded in the contexts they represent.

Throughout this study documents and records provided insights that were as valuable for generating theory as observations and interviews (Glaser & Strauss, 1967; Hodder, 1994). A number of legislative, Washington State Board for Community and Technical Colleges, Washington Higher Education Coordinating Board, CTC, and state agency documents and reports were coded and analyzed. The data included formal reports from agency-initiated discussions and planning activities as well as *real-time* communications among participants. Data from those documents were triangulated with data from interviews, data obtained from the literature, and data collected from first-hand observations by the researcher in the field (see Figure 2).

Data Preparation

Inperson interviews were conducted with each of the 10 participants at their respective campuses. Interviews were audiotape recorded with the knowledge and consent of the participants. Interview tapes were transcribed into computer-based word processing documents and checked for accuracy by professional transcriptionists. A printed paper copy and an electronic file copy of the interview transcripts were returned to the researcher. Electronic versions of the interview transcripts were converted to input data files for analysis by NUD-IST, a commercially available qualitative data analysis program designed to support constant comparative data analysis in qualitative research projects.

Coded identifiers were assigned to each interview participant. These identifiers reflected the interviewees' college type (community college or technical college) and job classification (administrator or practitioner). For community college interviewees, the identifier also included codes for the college location (urban or rural) and college distance education history (qualifying or not qualifying). At the completion of data analysis, interviewee identities were recoded to further protect the identity of participants who were cited in the report of the findings. Administrators were randomly assigned an alphabetical identifier. Practitioners were randomly assigned a numerical digit identifier. The two coding processes were independent of each other to prevent inferences about letter and number assignments for the participants.

A number of official documents and reports from state government offices and Washington state higher education system governance boards were obtained from printed sources and WorldWide Web sites. Participant observer field notes were transcribed into printed and electronic form. Meeting documents and planning process reports were obtained from strategic planning and governance meetings in which the researcher participated as an observer. These documents were printed or converted to electronic forms. Selection criteria for study participants were defined from research studies previously conducted by this investigator.

Data Analysis

The focus on developing understanding of distance education in this qualitative study carried through to data analysis that identified broad themes and patterns rather than narrow, precisely defined variables (Borg et al., 1993). Using constant comparative grounded theory methodology, data were continuously reviewed and codified into conceptual categories determined by properties of the data (Glaser & Strauss, 1967). The constant comparative method developed for this study followed the four stages suggested by Glaser and Strauss: (a) coding each data incident into categories and comparing incidents applicable to each category, (b) integrating categories and their properties, (c) delimiting the theory, and (d) writing the theory. Individual interview transcripts, participant observer field notes, and documents were studied for key words and phrases and organized into coding categories. Constant comparative analysis of data was conducted across data sources to synthesize findings into broad conceptual categories and to investigate relationships within and among the resulting categories. Data collection ceased when data analysis produced no new conceptual categories.

To assist with constant comparative analysis, data in electronic form were incorporated into the document management system of NUD-IST (Non-numerical

Unstructured Data Indexing Searching and Theory -building), a commercially available document system and indexing system computer program designed to support constant-comparative data analysis in qualitative research projects. Data in the document management system were indexed to create, manipulate, and store emerging concepts and ideas (Richards & Richards, 1994). Constant comparative analysis of data was used to synthesize interview data into conceptual categories as determined by properties of the data. Linkages, connections, relationships, and patterns were derived from continuous review of the data with the assistance of the NUD-IST software.

Trustworthiness

Stainback and Stainback (1988) define reliability as the "consistency and stability of data or findings" (p. 98). For qualitative research, they described it as the "fit between what actually occurs in the setting under study and what is recorded as data" (p. 101). To establish the trustworthiness of the findings, methodological triangulation was designed into this study. *Methodological triangulation* is a process that combines dissimilar data collection methods, such as interviews, observations, and document analysis to study the same phenomenon (Merriam, 1988). This strategy was chosen, because the strengths of one method balanced the flaws of another. By combining methods, this researcher achieved the benefits from each method, while overcoming their unique individual deficiencies (Denzin, 1970).

For this study, methodological triangulation was implemented by means of theoretical sampling that incorporated a number of divergent perspectives and variety of data sources into the study. To triangulate interviewee perspectives, interviews were conducted with one administrator and one distance education practitioner from each college. Data from a variety of Washington state agencies were collected and analyzed. Written document data sources spanned a 20-year timeframe. Given the recent and rapid evolution of the field and the responses of participants and organizations to this evolution, viewing the phenomenon over time mitigated exuberant and unreflective responses and helped establish the context for the grounded theory that emerged from this study.

Data from individual participant interviews were triangulated with the researchers perspectives developed from active and passive participant observations. These data were then triangulated with themes emerging from written records and documents. Finally, these data were triangulated with research literature.

Member checks were conducted with participants through written and verbal communication. Emerging categories and theories were discussed with knowledgeable administrators and practitioners within the field. Insights gained from those engagements were fed back into the constant comparative process to aid in triangulating conceptual categories through refinement of relationships among and within the categories.

Summary

General patterns and theories emerged during this study from constant comparison of data obtained in natural educational settings and collected through theoretical sampling techniques. Data from inperson unstructured interviews, participant observations, and agency documents were collected and analyzed. Constant comparative analysis was conducted throughout the project with the aid of specially-designed computer software. Data were continuously reviewed and compared to develop factors and patterns of factors that foster or impede distance education. The theory that emerged from this study may be relevant for educational practice and may guide educational leaders in making decision on distance education directions and practices (Stainback & Stainback, 1988; Strauss & Corbin, 1990; Strauss & Corbin, 1994).

CHAPTER IV

REPORT OF FINDINGS

> By identifying the parts of the system, or structure, and by analyzing how they interact as a whole, one can begin to design a distance education infrastructure that is flexible, adaptable, meets the needs of students, and ensures coordination among the various parts. Whether this is a centralized physical structure of "bricks and mortar" or the virtual university of the future, a systems perspective is necessary when designing a distance education structure. (Thach & Murphy, 1994, p. 13)

This study was conducted to develop a holistic understanding of distance education by identifying factors and patterns of factors that foster or impede distance education. The Washington State Community and Technical College System provided the context for the investigation of four primary questions:

1. What is the community and technical college perception of distance education?
2. What factors affect the development of distance education?
3. Which factors and factor patterns foster distance education?
4. Which factors and factor patterns impede distance education?

Systems theory was the guiding framework for this study. Constant comparison data analysis techniques produced a holistic understanding of distance education by: (a) identifying indicators that fostered or impeded distance education, (b) synthesizing indicators into factors, (c) analyzing the relationships among factors, and (d) examining distance education's role within Washington State community and technical colleges.

This chapter reports the findings of this study of distance education in the Washington State Community and Technical College System. The findings include: (a) participants' perception of distance education and its role within the Washington State community and technical colleges, (b) factors perceived by participants as fostering or impeding distance education, and (c) a description of the relationships among those factors.

Distance Education Perspective

Participants in this study perceived distance education as a means to increase student access to community and technical college programs. The available information and communication technologies enabled colleges in this study to engage in a variety of distance education activities. Distance education was viewed by participants as a way to serve place-bound and time-bound students who were unable to participate in traditionally structured and delivered classroom-based educational programs. "I've always thought distance education is a means to an end – the end being providing access to instruction and instructional services as a college" (Administrator A).

From the perspective of administrators and practitioners interviewed in this study, distance education was not a separate entity unto itself. Participants agreed that distance education provided students with more choices of ways to achieve their educational goals. "It provides freedom to students in both time and place" (Administrator E). The availability of distance education courses means "you can take courses at night school, you can take courses during the summer, you can take courses by distance education, or you can take courses during the day. What you're going to get is the course that you need and how it's taught or where it's taught is really secondary" (Administrator E).

In addition to extending access to unserved or underserved student populations, distance education provided flexible learning alternatives that surmounted traditional time and place constraints (Practitioner 1, Administrator E). It gave students more choices in the time, location, manner, and pace of their learning. Distance education's flexibility was perceived by participants in this study as a powerful asset in engaging and empowering students in active learning processes that reflected the diversity of student learning styles. "We see distance education's time-independence as a real value in this state, since we're dealing with a working population with a lot of adults. Providing diverse teaching styles to accommodate learning styles is a very legitimate reason why we should look at distance education" (Administrator A).

Participants predicted that as educational successes became defined less by institutional inputs and more by student learning outcomes, distance education would expand its catalytic role in developing learning-centered instructional systems. They believed there would be an associated shift within Washington State community and technical colleges from a focus on teaching methods to a focus on learning outcomes and "best learning practices." This shift was expected to produce an inevitable integration of distance education practices with traditional instructional practices.

This study found that distance education depended on technology for interpersonal communications and delivery of distance education materials. That dependency included both the college's technological ability to deliver distance education course materials and support services as well as the technological ability of students to access those materials. While permitting some forms of communication and interaction, participants believed technologies available at the time of this study were insufficient to replicate traditionally valued face-to-face interactions. Administrators and practitioners in this study agreed that a reduction in interactions posed a threat to the quality of instruction. For distance education to be accepted as a viable alternative to face-to-face instruction, it needed to incorporate mechanisms for rich student-with-student and student-with-instructor interactions. Participants predicted that distance education would achieve greater levels of acceptance when distance education interactions more closely paralleled those of traditional face-to-face instructional settings. They expected those interaction environments to converge as technology capacities expanded, technologies matured, and student access to those technologies became more ubiquitous.

Participants in this study also concurred that distance education held promise from an economic and management perspective. They felt distance education technologies and methodologies "permit us to work with neighboring institutions in providing a comprehensive curriculum – things that we could not do by ourselves" (Administrator A). Institutional distance education partnerships leveraged faculty expertise and college resources to benefit both students and colleges. Student benefits included access to a broader curriculum than would otherwise be available from any individual college. Colleges realized benefits by aggregating low class enrollments over multiple locations to produce economically viable classes.

Institutional distance education partnerships also enhanced the colleges' ability to meet the educational demands of a rapidly growing student population in times of limited and diminishing financial resources. To fulfill that potential, participants in this study asserted that investments needed to be made in technology, support staff, and faculty development. While the associated costs were perceived to be great, they were also perceived to be considerably less than the massive capital investments in traditional "brick and mortar" facilities that would be needed to serve the higher education student populations projected for the 21st century.

The preceding information is important to fully understand the distance education factors that emerged from this study. The following findings identify the factors that were the primary focus for this investigation.

Factors Affecting the Development of Distance Education

Data analysis revealed indicators that fostered or impeded distance education. Five major factors emerged from a synthesis of the multiple indicators discovered in this study. The five major factors were: (a) institutional leadership, (b) technology capacity, (c) support, (d) faculty and department acceptance, and (e) funding. Related factors were found to be embedded within these five major factors. Other factors were identified, but were perceived as potential factors only, rather than current factors in Washington State community and technical colleges. An overview of the factors that emerged from this study is presented in Figure 3.

The interrelated nature of factors that emerged from this study was expressed by all participants interviewed for this study. Notwithstanding Washington State's financial commitment to distance education over the past few years, participants agreed that money alone would not sustain community and technical college distance education efforts. As Administrator A asserted, "the money itself will not do it . . . it takes a combination of several factors." Distance education takes sufficient time and adequate resources, someone with authority to make it happen, a college vision, faculty "buy-in," administrative leadership, technical infrastructure, a willing faculty, and support for faculty (Administrator C, Administrator E, Practitioner 1). The comments of Administrator D reinforced that perspective.

> I think about the time it's going to take to get some of these instructional areas planned out and ready to go. And then that becomes a financial issue, because we have to give faculty some time away from their regular duties to do some of this development. So they need some release time and some funding to develop some course work. And then also we need some time in the technology division to get some of the nitty gritty stuff ready to provide those opportunities for the faculty. And it seems like we never have enough time and staff to do the new things that we want to do. So I guess again that comes into some kind of institutional support which means money to take care of those areas. It will mean faculty need to be trained--they'll need to have time to develop what they want to do. The technology department needs to be able to hook up whatever they need to be hooked up, and prove the technological guidance so that they, the faculty, can concentrate on their instruction and not worry about the equipment and the software and lines and all those things.

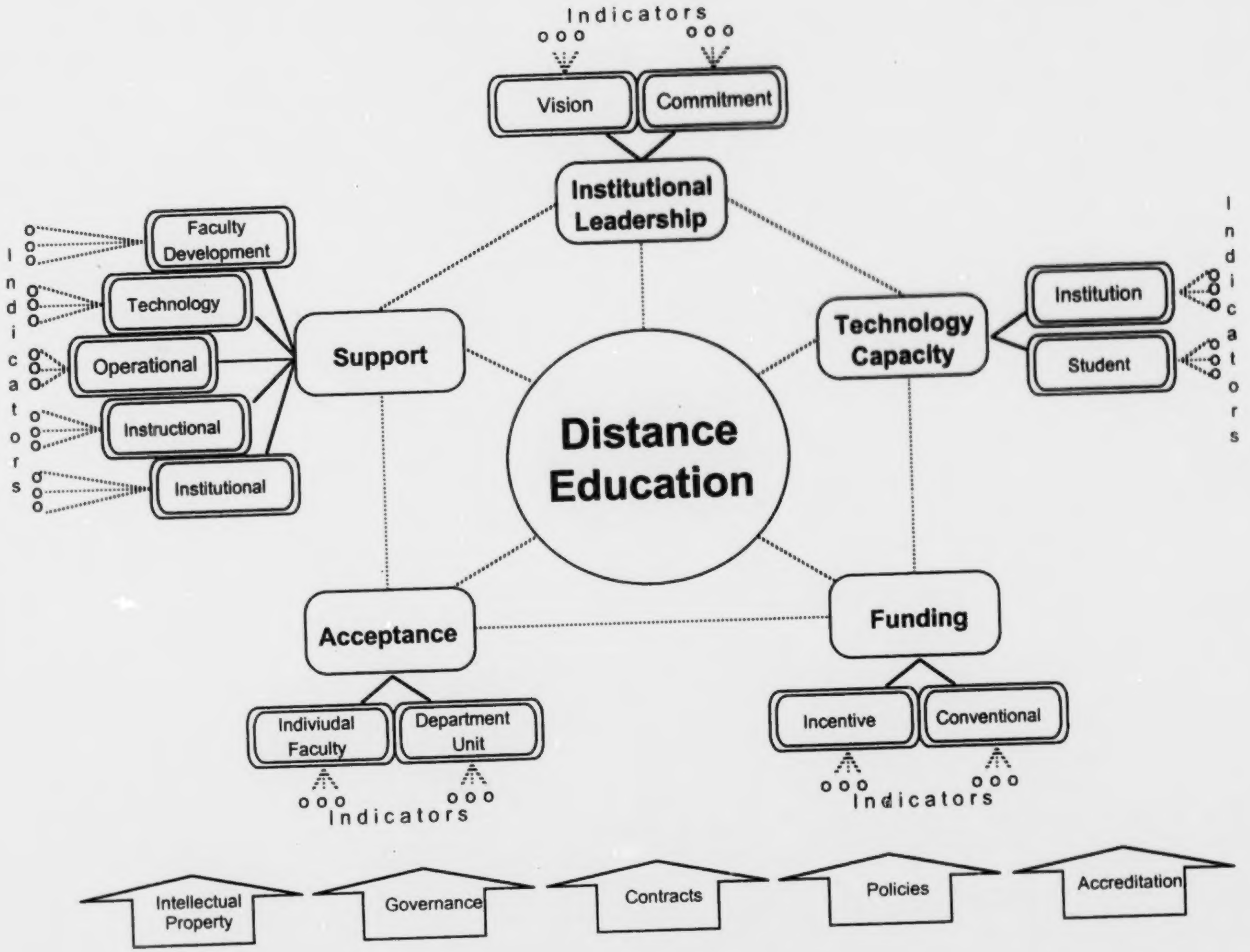
Indicators
Vision
Commitment
Institutional Leadership
Faculty Development
Technology
Operational
Instructional
Institutional
Indicators
Support
Distance Education
Technology Capacity
Institution
Student
Indicators
Acceptance
Funding
Indiviudal Faculty
Department Unit
Indicators
Incentive
Conventional
Indicators
Intellectual Property
Governance
Contracts
Policies
Accreditation

FIGURE 3. FACTORS AFFECTING THE DEVELOPMENT OF DISTANCE EDUCATION

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Factor 1: Institutional Leadership

> Effective leadership, whether contrasted with management or combined with management, is distinguished by vision that creates focus, by the ability to grasp the "big picture" and communicate meaning to develop commitment, by engendering trust, and by fostering the process of renewing values, goals, energy, and human possibilities. (Wilcox & Ebbs, 1992, pp. 27-28)

Gardner (1990) defined leadership as "the process of persuasion or example by which an individual (or leadership team) induces a group to pursue objectives held by the leader or shared by the leader and his or her followers" (p. 1). To induce Washington State community and technical college communities to pursue distance education, this study found that leaders needed to create a distance education vision which was reinforced by a demonstration of commitment to that vision (see Figure 4). These manifestations of leadership were important for the development of "buy-in" for distance education. Without leadership vision and commitment, distance education drifted. As a practitioner from a college actively engaged in distance education observed, "vision and commitment provided sustenance for things that were already growing

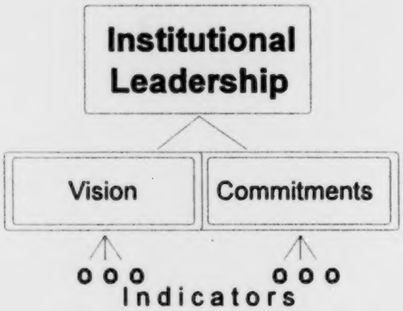


FIGURE 4. INSTITUTIONAL LEADERSHIP

slowly here, and I don't think we'd be nearly as far as we are now if it hadn't been for those kinds of things" (Practitioner 4).

Vision.

> I wish I had a better vision for how the pieces can go together. (Practitioner 2)

Vision is needed for organizations to clarify their purpose and direction (Wheatley, 1994). According to the findings of this study, vision was one of two critical components of institutional leadership. Participants in this study agreed that to sustain distance education, a contextual distance education vision needed to be developed and articulated. That vision needed to describe distance education's role in fulfilling the mission of the college. "There has to be a consensus that distance education is something the college wants to undertake" (Practitioner 2). Participants felt that the lack of vision was a barrier to distance education, since "sustaining distance education would probably be difficult if it wasn't perceived to be within the mission of the college" (Administrator E).

This study found that distance education vision needed to be supported by institutional and leadership commitments. Further, it found that trust was essential to establishing the credibility of that vision. "If your faculty don't trust the person who is in charge, that they're not going to get screwed financially, that you're not going to take advantage of them, that you listen to them, that they have a role and they understand what they need to do, . . . it ain't going to work no matter what the hell you do" (Administrator C).

In addition to fostering trust and "buy-in" for faculty and staff, this study found that a distance education vision had some direct pragmatic benefits. A clear vision of distance education and its role within the college was found to provide a starting point for action. It helped determine the small initial steps of large projects (Administrator D). Conversely, the lack of a distance education vision created uncertainty about distance education's role which ultimately resulted in the abandonment of distance education as a significant college effort.

Commitment. Commitment is the second critical component of institutional leadership. This study found that distance education required a consistent institutional commitment. Turning distance education "on and off" posed a real danger in the long run (Administrator E). Tangible commitments, such as planning efforts and budget allocations, demonstrated institutional commitments to distance education. Those commitments helped establish the credibility of distance education and fostered faculty and department "buy-in." "If your president or your primary administrators were not giving distance education a high priority and putting that on the forefront when budgets are developed during strategic planning, it certainly wouldn't get the attention that it would get otherwise" (Administrator A).

Participants in this study agreed that structure was needed to support distance education vision and institutional commitments (Administrator A). A primary indicator of distance education structure was the identification of someone to head distance education efforts. "You need to have somebody in charge!" (Practitioner 4, Administrator C). Colleges that were actively engaged in distance education had an administrative position with institutional authority to chart directions, make decisions, and implement distance education initiatives. Those colleges had a distance education "champion" – someone who pulled the pieces together and made things happen (Practitioner 4).

Colleges that were less actively engaged in distance education did not make a similar commitment for distance education leadership, but saw the need for it. An administrator from one such college felt the need to "have a person identified as the distance education coordinator – someone to be in charge of nontraditional education" (Administrator A). Without that institutional commitment to leadership, distance education languished – in spite of good intentions – as described by one practitioner. "Distance education at this college has been somewhat of a frustrating process, because in as much as the administration would like to do things, it has been unwilling at this point, to commit either resources or assemble a group to really do some planning" (Practitioner 3).

Participants agreed that staff and resources needed to be designated to support distance education operations. "If you don't have a central office to do daily distance education operations, . . . you're doomed to failure" (Administrator E). Facilities were needed to conduct the day to day distance education operations. Staff needed space and resources to catalogue, duplicate, and distribute video and audiotapes and other materials needed to support distance education. Since many distance education operations were perceived as unique or specialized, participants felt that distance education-related activities could not easily be absorbed by traditional support areas of the college.

More than most other form of instruction, this study found that distance education was complex by its nature and overlapped a number of areas within the college. Consequently, distance education required a leadership commitment to comprehensive and inclusive planning. Participants concurred that top down administrative decisions might be sufficient to initiate distance education initiatives, but top down mandates alone would not be sufficient to sustain distance education (Practitioner 3). Participants further agreed that to be successful, distance education planning needed to involve faculty in a meaningful way from the earliest stages of consideration. Without inclusive planning and decision making, only piecemeal progress with distance education was achieved (Practitioner 5).

Factor 2: Technology Capacity

Technology capacity and its associated infrastructures were found to be critical components of a distance education teaching and learning environment (see Figure 5). "Distance education isn't going to happen unless we concentrate

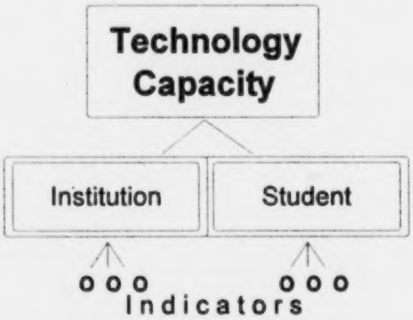


FIGURE 5. TECHNOLOGY CAPACITY

on the technology" (Administrator C). "It's almost to the point that we can't proceed without a maturation of the technology" (Administrator B). While technologies at the time of this study were perceived to be limiting, the potential of emerging technologies was viewed as promising.

Institutional capacity. Participants in this study perceived that the lack of technology-based institutional capacity hindered distance education in Washington State community and technical colleges. They believed institutional technology infrastructures were essential to support the capacity required to develop and deliver distance education (Administrator B). Without an adequate and reliable institutional technology infrastructure, faculty became frustrated, distance education capacity became strained, and enthusiasm for distance education evaporated.

> We had a lot of technical problems with our infrastructure. . . .a lot breakdowns and the people who were kind enough to want to try it and excited enough about trying it got very burned out on it. They'd go down to start it and all of a sudden we weren't making a connection and there's 30 minutes into the class while we're doing cold start, warm start and everything else. After you do that happens 5-6 times they thank you and say, "I'm not interested." (Administrator E)

An administrator from a college with a limited distance education history expressed another concern. "We are very concerned about even providing technology infrastructure for regular day to day computing in our computing labs – much less having to deal with distance education and what it brings" (Administrator A). Participants from colleges that were actively engaged with distance education also expressed concerns for technology capacity. "We've done all the easy stuff - the stuff that takes the least distance education infrastructure and support" (Administrator C). Distance education efforts in the future were expected to require even more sophisticated technology capacity and technical infrastructures. Participants felt that those technologies were in sight, but weren't available at the time of this study (Practitioner 5).

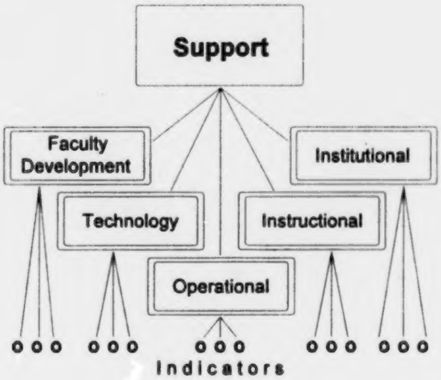
Student capacity. In addition to being dependent on institutional technology infrastructures, this study found that distance education in Washington State community and technical colleges was dependent on the ability of students to access distance education programs and services. At the time of this study, student access options and technology capacities were not consistent across Washington State. Access to technology infrastructures that produced high levels of interactions was limited. Completion of the statewide K-20 network project was expected to increase levels of distance education interactions and equalize connectivity among Washington State community and technical colleges, but was expected to do little to assist students with access from their homes or worksites. "Until student infrastructures become more endemic, our audience potential in Internet classes, for example, will not be as great as a lot of people would like to think" (Administrator C). Notwithstanding capacity limitations, remote access in any form benefitted students, because it allowed colleges to come to the students, rather than requiring students to come to the colleges (Administrator B).

Technology posed another dilemma for distance education in Washington State community and technical colleges. High technology requirements produced rich learning environments, but limited the number of students with adequate technology capacity to benefit from that enhanced learning environment. Lower technology standards expanded the potential student population with adequate technology capacity, but resulted in more limited learning environments. This dilemma posed a number of questions that impacted the potential success of distance education in Washington State community and technical colleges. Where should distance education standards for technology be set? How would technology standards affect distance education environments and learning outcomes? What assumptions should be made about a student's ability to access distance education resources?

This study found that the addition of distance education-related costs in the form of required technologies, access charges, and special instructional fees raised questions of educational elitism. Not unlike the issues confronting the Washington State community and technical colleges in general, distance education faced issues of access, quality, and equity. Participants felt that technology capacities needed to mature to allow inexpensive, ubiquitous, and transparent access by students. They speculated that when technologies ceased to operate as significant filters, distance education activity would increase dramatically (Administrator B).

Factor 3: Support

In this study, support was found to be the most complex factor to affect distance education (see Figure 6). Support was found to be essential in five different areas: (a) faculty development, (b) technical support, (c) operational support, (d) instructional support, and (e) institutional support. "If you pull out one of those components, distance education is going to come apart at some point" (Practitioner 4).


Support
Faculty Development
Institutional
Technology
Instructional
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o o o
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Indicators

FIGURE 6. SUPPORT

Putting these support pieces in place was a meaningful demonstration of institutional commitment for distance education. "If I could assure faculty that they would have the necessary support if they proceed in this area, then I would receive a much more enthusiastic response than I do now" (Administrator A). This study found that aligning all five of these support areas was essential to the success of distance education initiatives. Without an alignment of these five areas, distance education did not survive (Administrator B).

In this study it was not possible to designate one of these support areas as more important or more necessary than the others. Some areas, such as technical support and operational support, were needed to address immediate distance education needs. Other areas, such as faculty development and instructional support, contributed to the long term sustainability of distance education.

Faculty development support. There was an awareness among participants in this study of Washington State community and technical colleges that faculty development was a key area in determining the long term success or failure of distance education. Having faculty interested and prepared to take on this new kind of project was critical for success (Administrator D). "I honestly think faculty development is probably the most overlooked piece of this whole mosaic right now" (Administrator B). Two forms of faculty development were identified: (a) an awareness of the distance education paradigm and (b) training in the use of distance education tools. "Faculty are so skeptical that you need to train them in both the new paradigm methods as well as the software" (Practitioner 5). Participants in this study concurred that helping faculty develop an awareness and understanding of teaching and learning in distance education environments was the more important of the two faculty development initiatives.

An overarching understanding of distance education was needed to guide faculty in making decisions on the choice of distance education tools. "Until you change the paradigm on how you approach what instruction is and how it's accessed and delivered, you can dink around with tools until the cows come home and it isn't going to do a damn bit of good - you can't do anything with them" (Administrator C). "I know enough of the tools, but I'd really like a better understanding of how to put them together to do a better job with helping our students learn" (Practitioner 2).

Participants in this study concurred that once faculty in Washington State community and technical colleges had a conceptual understanding of technology and its role in distance education, they needed training in the use of distance education tools. Technical training helped faculty achieve a level of comfort with distance education technologies and tools. Without technical training, distance education suffered (Administrator E).

Technical support. Many forms of distance education in Washington State community and technical colleges were dependent on information and communication technologies. Yet technologies alone were found to provide only the potential for the success of distance education. Participants in this study agreed that the smooth operation of those technologies was critical to fulfill the potential of the technologies. As the primary vehicle for communication and distribution of materials, institutional technology infrastructures needed to be consistent, reliable, and predictable for students and faculty (Practitioner 3).

Participants in this study further agreed that a shortage of technical support critically impacted distance education. "The one area we're weakest in right now is tech support" (Practitioner 4). "There's more and more software, more and more computers, and less and less people to put them up and run them" (Administrator E). "We have this huge infrastructure and we don't have the support for it. In some ways we're choking on this technology right now. We're just hardly keeping up" (Practitioner 4).

Inadequate technical support had widespread implications in Washington State community and technical colleges. It undermined confidence in the availability and reliability of the technologies and resulted in serious concerns for the credibility of distance education as a method of teaching and learning. That concern was reinforced by one practitioner who described one such experience. "We didn't have the technical support and had some instructors that had some terrible experiences where they could only get the equipment up 1 out of 3 days for a course that met 3 days per week. What do you do with a situation like that? You're really in bad shape" (Practitioner 4).

Operational support. "Distance education in Washington State community and technical colleges survives on structure" (Administrator C). Participants agreed that the complex nature of distance education required more organization and management than traditional classroom-based courses (Practitioner 1). Without a central office or organizational structure to support daily distance education operations, "you're doomed to failure" (Administrator E). "The instructor simply can't take care of all that stuff. He has to have the staff of the college behind him and support him to do these little things here and there that take a lot of his time. He needs to devote his time to the instruction and organization and management of the class" (Practitioner 1).

The findings of this study suggested that without operational support, distance education became much harder and discouraged faculty involvement with distance education. "I didn't have nearly the kind of TA support in getting the letters out and putting the packets together. I ended up giving it up simply because it was much harder to do" (Practitioner 4).

Instructional support. This study found that distance education course development took time and assistance. "That's what's missing" (Administrator C). "As I talk to some faculty about redesigning curriculum whether it be for distance education or otherwise, they want some assurances that they will be provided adequate support and assistance in doing some innovation" (Administrator A).

Time to develop and implement distance education courses in Washington State community and technical colleges was found to be an important factor with faculty. "I suppose money has something to do with my involvement with distance education, although I wasn't motivated by that" (Practitioner 4). "If I don't have time to work on it . . . I'd just sort of say, 'No, I can't. I can't do anything else'" (Practitioner 5).

As content experts, faculty concentrated more on course content than course design. As a result, course designs employed instructional practices based on historical teaching and learning models. Washington State community and technical college faculty had a limited awareness of learning theories and even less experience in fusing learning theories with instructional practices. Innovative distance education learning strategies offered opportunities, if not mandates, to fuse learning theories with learning styles, communication dynamics, instructional modalities, and delivery mechanisms to advance student learning. Since few Washington State community and technical colleges employed instructional designers to assist faculty with the development and implementation of innovative instructional methods, distance education courses were not optimized for nontraditional forms of delivery. "What we do not have, is any instructional support personnel on campus. In fact, in some respects it's handicapped some of what we are doing even outside of this whole area of distance education" (Practitioner 3).

Institutional support. The cooperation of instructional support and student services areas in Washington State community and technical colleges was important for the success of distance education initiatives. Student services areas, such as advising, admissions, and testing were "big items" (Administrator D). In colleges where distance education was successful, libraries provided research assistance and support materials to help students. "Our library has been very good. Students are able to get into our library for research from other areas and they're pushing very hard to support what we're doing here. . . . But if counseling says, 'no, we're not going to support this [distance education] activity, we won't tell students about these courses' or 'we'll down play them,' we'd be in trouble" (Administrator E).

This study found that distance education also required institutional support in the form of backing of the administration (Practitioner 1). "Sometimes we fail, and in that case you have to then have an institution that supports that kind of [distance education] experimentation, so that a person isn't punished when something doesn't go well" (Administrator D).

Factor 4: Acceptance

Resistance from faculty and academic departments in Washington State community and technical colleges posed a significant threat to the initial implementation and long term sustainability of distance education (see Figure 7).

"The single biggest impediment to distance education is people who have their heels planted and don't want to buy in to it at all" (Practitioner 5). Resistance resulted from uncertainty associated with the implementation of nontraditional practices. That uncertainty engendered fears of a loss of individual control over educational content, processes, and outcomes. "Often there will be faculty or departments that are not very excited about distance education and are fearful of a different way of delivery, or it being out of their hands" (Practitioner 4).

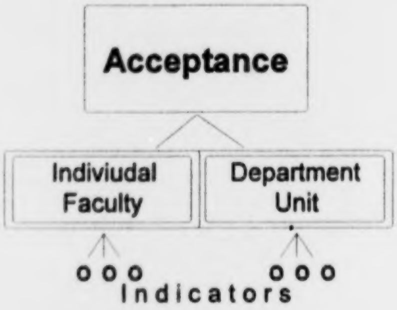

FIGURE 7. ACCEPTANCE

"Distance education initiatives work when you have a lot of really committed people" (Administrator D). That commitment typically occurred over time in the Washington State community and technical colleges, since many colleges were bound in academic and institutional traditions cultured over time (Administrator A). As a result, some colleges in this study were generally very slow to accept distance education. "I think society is almost more accepting of it than the institutions that are providing it" (Administrator E). However, when people saw a value in doing things in a different or innovative way, they developed "ownership" for those new ways. Once ownership was established, "people were very supportive of it and made it happen" (Administrator A).

Individual faculty. This study found that faculty attitudes were key to the success of distance education in Washington State community and technical colleges. Participants in this study were emphatic in their agreement that distance education could not succeed without faculty buy-in (Practitioner 2). "You've got to have the faculty that are willing to do distance education. If you don't have a willing faculty, it will never get done" (Practitioner 1). When faculty were hostile to technology or felt that the only place that instruction and learning could occur was in a formal classroom setting, faculty had to be persuade that distance education was worth doing before distance education could progress (Practitioner 5).

Connections with established programs was found to be a way to enhance distance education's credibility and persuade faculty that distance education was worthwhile. "That's the kind of thing that a distance education program needed – some integration to make those connections with existing programs. Otherwise, it just kind of sat out there by itself" (Practitioner 3).

This study revealed that in some Washington State community and technical colleges, the biggest deterrent to distance education was the faculty themselves. Some faculty were concerned about the quality of the distance education learning processes. The perception of distance education as a different, and therefore lesser, learning experience for students was found to reinforce already negative faculty attitudes toward distance education. "Some faculty felt distance education courses were watered down and didn't want anything to do with them" (Practitioner 1). Those faculty prevented distance education courses from being developed, simply because they were resistant to that mode of instruction (Practitioner 1).

Adding to faculty concerns for the instructional quality of distance education courses was a concern for the quality of associated interpersonal interactions. Negative faculty attitudes regarding the quality of distance education student-with-student and student-with-faculty interactions, coupled with a sense of loss of "gatekeeper" control over subject content and learning options, resulted in resistance to distance education.

Department unit. Department attitudes toward distance education in this study were influenced more by department politics than by concerns over academic integrity. For many departments, the arguments for, and against, distance education were the same as the arguments expressed by individual faculty. One area of difference, however, was the institutional politics that influenced departmental decision making.

Historically, discipline-specific course, program, and delivery decisions were the sole domain of academic departments and divisions. Change, in the form of more distributed forms of access and options for learning, posed a threat – or an opportunity – to the political strength of some departments and influenced the success of distance education initiatives. "It's hard to go ahead with distance education with a department that says, 'no thanks, we're not interested.' You don't impose courses on a department – you need to get the department to buy-in and accept the course. . . . if they don't, then you don't offer the course" (Administrator C).

Factor 5: Funding

This study found that a need for adequate funding was related to all distance education factors. As expressed by one administrator from a college without a strong distance education history, "I think one of the reasons why we have not proceeded as quickly as we'd like in the area of distance education is because of a lack of resources" (Administrator A). While not a panacea for distance education, funding was important (see Figure 8).

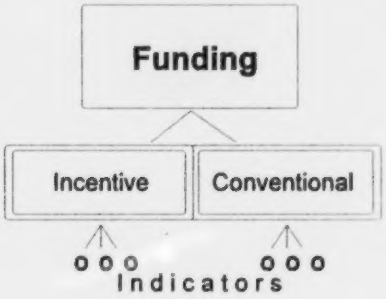

FIGURE 8. FUNDING

> I hate to say money is a key factor, because I know that money doesn't solve everything, but right now, we're so bare bones. And we're just trying to keep up with serving the students that we have and it's very difficult to undertake some new initiatives and to make faculty feel good about what they're doing without that support. So I think that's a real key for us right now. (Administrator D)

At the time of this study, acquisition costs for technology were high. Rapid developments of new technologies were found to dramatically reduce the effective life of distance education technologies. To maintain adequate levels of institutional technology capacity, technology infrastructures needed to be routinely upgraded, replaced, and enhanced.

Incentive funding. All colleges involved in this research received federal or state incentive funding for instructional innovation, institutional advancement, or institutional technology capacity. For colleges without a history of distance education, incentive funds created an awareness of the need for investments in technology and distance education. That awareness included the needs of traditional campus-based computer labs and classrooms, as well as the needs of distance education. "I think it's safe to say in this institution there was no educational technology consciousness until the ETI money came along" (Administrator B).

Participants in this study concurred that incentive funding provided the motivation and opportunity to invest in the use of technology for instructional purposes. They further agreed that incentive funding also provided a message and a means to reinforce Washington State's educational priorities. Incentive funding was also found to be one way for Washington State to demonstrate its commitment to transform education through the application of technology for instructional innovation.

For colleges with a background in distance education, incentive funding provided an opportunity to sustain existing distance education activities and expand into new areas of distance education. "I'd say the ETI and Title III funding just moved along a lot faster the kinds of things that were already going on here. . . . They provided sustenance for things that were already growing slowly here. I don't think we'd be nearly as far as we are now, if it hadn't been for those kinds of things" (Practitioner 4). "ETI funding helped us to accomplish what we had set out as a vision for the college" (Administrator B).

Conventional funding. Incentive funding received by the colleges in this study was targeted primarily for technology to enhance institutional technology capacity. Eligibility restrictions precluded the use of incentive funding for the other factors identified by this study. Institutions - typically those with a history of distance education - leveraged incentive funds with conventional funds or "in kind" contributions to gain both short-term and long-term distance education benefits. Colleges without a distance education history typically applied incentive funds for short-term (primarily technology infrastructure) improvements only.

Colleges without an institutional commitment to technology and distance education adjusted institutional agendas to meet external criteria of incentive funding. The resulting distance education benefits at these colleges appeared to be short-term and limited in scope. Colleges with institutional commitments to technology and distance education used the opportunities afforded by the incentive funding to advance their institutional agendas. The resulting distance education benefits at these colleges appeared to be more sustainable over time. Colleges that achieved substantive advances in distance education did so by allocating institutional resources across the five factors identified in this study.

This study found that incentive funding was a strong motivator and should not be underestimated as a catalyst in the development of distance education. "I certainly would hope that external funding sources would be available. I think they would be an important factor in how quickly we move toward our [distance education] goals" (Administrator A). Regardless of the availability of incentive funding, participants in this investigation of Washington State community and technical colleges agreed that colleges need to make institutional commitments to support distance education. "I think some outside funding could enhance distance education efforts, however I really think we needed to get started with some of these movements and some of these directions, regardless of whether or not we have the external money" (Practitioner 3).

Potential Factors that May Foster or Impede Distance Education

This study revealed that there were other factors with the potential to affect distance education in Washington State community and technical colleges, but were not yet considered to be pressing issues. Chief among the potential factors are: (a) intellectual property, (b) governance, (c) contracts, (d) policies, and (e) accreditation. As one community college administrator observed, these issues "are going to be significant in the future. It's just a matter of when they're going to hit us" (Administrator A).

Intellectual Property

Individual and institutional development of distance education materials was not a significant effort at the time of this study. Ownership of intellectual property was found not to be a matter of immediate concern to Washington State community and technical colleges. Given the potential growth of distance education and accompanying development of instructional resources, participants perceived a need to begin to outline strategies that deal with the legal rights to distance education materials. At the time of this study, however, intellectual property issues had not hindered distance education. "I think that it is becoming more and more important, . . . but it hasn't precluded us in moving forward distance education so far here" (Administrator E).

Governance

This study found that distance education resided in the periphery of college governance at Washington State community and technical colleges. This approach served to deflect substantive discussions of distance education as part of traditional faculty load, decision making, and evaluation - and their associated academic, political, and contractual issues.

Participants felt that distance education governance structures would eventually become fused with more traditional institutional governance structures. They agreed that when that happened, "governance and load could become issues" (Administrator E) - especially for colleges without a history of distance education activity. Over time, colleges with a history of distance education found ways to resolve governance and load problems (Administrator C).

Contracts

Inherent in the discussion of governance was the notion that distance education issues had not been negotiated into full-time faculty contracts at Washington State community and technical colleges. Faculty compensation for distance education was typically handled "outside of load" - either as overload ("moonlight") classes or through college continuing education or self-support programs. In some cases, distance education letters of agreement were attached to faculty contracts.

The reason for the delay in incorporating distance education into faculty contracts was twofold. The first reason was that distance education was still a relatively new and small effort at most Washington State community and technical colleges at the time of this study. There were few precedents to guide contractual language. The second reason for the delay was due to the complexity of distance education activities. Administrators and faculty were reluctant to incorporate distance education into faculty contracts, "because we're dealing with so many unknowns" (Administrator A).

Policies

Few policies at state and local levels that dealt specifically with distance education in the State of Washington had been developed at the time of this study. Participants expected the situation to change and agreed that policies had the potential to influence Washington State community and technical college participation in distance education initiatives, but would not greatly influence faculty involvement with distance education (Administrator B).

Participants in this study felt that rather than focusing on the development of formal high level distance education policies, there was a greater need for the development of informal distance education guidelines. They further agreed that the development of formal policies should be delayed until more people had a better understanding of distance education and its attendant issues (Practitioner 3).

This study found that the success of distance education was based on informal, flexible, and trust-based distance education practices (Administrator E). "The success of distance education has been up to this time, and maybe into the future, a matter of mutual trust" (Administrator E). Participants speculated that as distance education attained greater stature and expanded both in scope and complexity, trust-based practices would need to be replaced with more formal distance education policies in Washington State community and technical colleges. Participants added, however, that the formation of formal distance education policies should not supplant trust-building as a key component of distance education development.

Accreditation

Program and college accrediting agencies were only beginning to address distance education issues at the time of this study. Washington State community and technical colleges that were involved with distance education used existing accreditation standards in developing distance education programs. Although there were a number of distance education issues that needed to be addressed, participants in this study believed that obtaining accreditation approval for distance education was more of an administrative issue than an issue of instructional quality and integrity. Administrator B noted, "accreditation will be a big factor in academics, but probably will not be a factor in terms of job training, particularly acquisition of initial salable skills."

Accreditation did impact distance education in one area. Compliance with accreditation criteria for distance education (where such criteria exist) helped to bolster distance education's credibility with faculty and program administrators. As Administrator A observed, "if we didn't address the accreditation criteria or standards, that would certainly hold us back in our [distance education] effort."

Summary

> I would rather see a smaller distance education program if all of those parts were in place, rather than a bigger distance education program where some of those parts are very weak, like the support issue, the technical support. (Practitioner 4)

This study found indicators of five major factors that fostered or impeded distance education in the Washington State community and technical colleges researched in this study. Those five major factors were: (a) institutional leadership, (b) technology capacity, (c) support, (d) faculty and department acceptance, and (e) funding. These five factors formed a system of interrelated factors that collectively fostered to impeded distance education. Each factor was found to be composed of subareas that were also identified.

This study also discovered five factors with the potential to foster or impede distance education in the future. These five potential factors were: (a) intellectual property, (b) governance, (c) contracts, (d) policies, and (e) accreditation. These five potential factors were not perceived to be significant distance education factors in the Washington State community and technical colleges at the time this study was conducted. Participants did, however, perceive these factors as having the potential to become influential factors in the future.

CHAPTER V

CONCLUSIONS, IMPLICATIONS, AND RECOMMENDATIONS

> The challenge is for us to see beyond the innumerable fragments to the whole, stepping back far enough to appreciate how things move and change as a coherent entity. We do, after all, live in a very fuzzy world, where boundaries have an elusive nature. (Wheatley, 1994, p. 41)

Conclusions

The purpose of qualitative research is to generate theory. This qualitative study of distance education generated four major hypotheses. These hypotheses have implications for higher education practices and invite additional investigations using other research methodologies. Specific recommendations for future research are provided later in this chapter.

HYPOTHESIS 1: The five major factors that affect the development of distance education in community and technical colleges are: (a) institutional leadership, (b) technology capacity, (c) support, (d) faculty and department acceptance, and (e) funding.

HYPOTHESIS 2: These five major factors are dynamically and interdependently linked to create a "whole" that is greater than the sum of its parts.

HYPOTHESIS 3: Distance education in community and technical colleges is advanced by coordinating and balancing these factors, rather than by focusing exclusively on any single factor.

HYPOTHESIS 4: Factors that have the potential to foster or impede distance education in the future, but have little effect in 1997 include: (a) intellectual property, (b) governance, (c) contracts, (d) policies, (e) accreditation.

This study found that distance education in Washington State community and technical colleges was affected by interrelated factors that individually and collectively fostered or impeded distance education. The factors of institutional leadership, technology capacity, support, faculty and department acceptance, and funding were found to be essential ingredients of successful distance education initiatives in the Washington State community and technical colleges investigated in this study. Conversely, the absence of any of these factors posed a threat to the success of distance education. The findings from this study were similar to the characteristics of successful distance learning programs reported in the literature (Gross, Gross, & Pirkl, 1998; Kearsley & Lynch, 1992). Although conclusions drawn from these findings were unique to the environment in which this study was conducted, the results may be generalizable to other distance education contexts.

The interdependent relationships of the factors described in this study reinforce the assumption that distance education in the Washington State community and technical colleges is a system of interrelated factors. These factors create a "whole" in which the factors continuously reinforce each other. An absence or inadequacy of any one factor has a negative impact on the other factors. Consequently, factor-specific issues should not be considered in isolation from other factors, but should be considered in the context of their relationships with other factors. Decisions on individual factors should be based on how the resulting actions will foster or impede the overall development of distance education. This study concludes that distance education benefits by coordinating and balancing support for all factors and that disproportionate levels of support foster or impede the overall success of distance education.

Implications

These findings have implications for distance education's function and role within community and technical colleges. Higher education continues to struggle to transform itself to meet changing expectations, demands, and market conditions. While college administrators brace for larger and more diverse student populations, pessimistic funding projections suggest traditional management models and instructional practices will be inadequate to meet projected needs. College leaders are challenged to develop operational and instructional strategies that leverage scarce resources while simultaneously producing effective and relevant learning outcomes.

Distance education is an area of increasing interest and importance. Its innovative instructional methods, based on information and communication technologies, have the potential to: (a) strengthen the alignment of community and technical college services with the educational needs of an information-based society, (b) achieve an economy of scale in meeting increased demands for educational services, and (c) expand the number and variety of student learning options. Because distance education activities overlap many conventional areas, the challenges of integrating distance education strategies into traditional college environments are broad and complex.

Community and technical colleges are under increased scrutiny for accountability of institutional operations and student learning outcomes. They must respond quickly and effectively to calls for change. The consequences of failed or incomplete ventures are great, so new nontraditional initiatives must be skillfully designed and thoughtfully implemented. The integration of distance education into community and technical college environments requires thoughtful consideration for the interactions among leadership, technology capacity, support, acceptance, and funding factors.

Recommendations for Practice

Distance education appears to succeed when the factors identified in this study are mutually supportive and harmoniously balanced. While limited benefits may be achieved by acting on the individual factors in isolation from each other, greater benefits may accrue from a more comprehensive vision of distance education in which the factors are treated in relationship with each other. Based on the findings of this study, the following recommendations are offered to community and technical college administrators and distance education practitioners who desire to foster the development of distance education in their institution:

Institutional Leadership

- Treat distance education as a system of multiple interacting factors.
- Establish a clear vision for distance education and incorporate that vision into the college's mission statement.
- Establish distance education's priority within the college and commit college resources to support it.
- Involve stakeholder groups in institutional distance education strategic planning and decision making.
- Integrate distance education activities as part of normal college operations.

Technology Capacity

- Develop and maintain institutional capacity to support distance education.
- Establish technical standards for distance education with an awareness of the technical capacity available to students.

Support

- Implement a distance education organizational structure for institutional distance education leadership.
- Provide support staff and resources for distance education operations.

- Provide technical support staff and resources to install and maintain institutional infrastructures.
- Assist faculty in developing distance education paradigms of teaching and learning.
- Provide training for faculty in the use of distance education tools.
- Provide faculty with the time, freedom, and instructional design support to develop learning strategies optimized for distance education.

Acceptance

- Involve faculty in distance education pilot projects to build credibility for distance education as a viable instructional practice.
- Identify departmental dynamics that could foster or impede distance education.

Funding

- Establish permanent institutional budgets to acquire and replace distance education technologies and support resources.
- Use funding as a vehicle to balance distance education factors.

Recommendations for Further Research

This study identified and described factors and patterns of factors that were perceived to foster or impede distance education in Washington State community and technical colleges. Findings from this investigation suggested that those factors formed a system in which they individually and collectively fostered or impeded distance education. While these findings are informative, they are limited to the context of the participants and the Washington State community and technical colleges selected for this study. Additional research with other populations is need to determine if these findings are generalizable. The following recommendations are made to guide that research:

1. Employ a modified Delphi technique to validate the factors that foster or impede distance education in other colleges.
2. Conduct a statistical analysis study to determine the relationships among factors.
3. Construct and validate an instrument with specific indicators to measure the degree to which these factors are present in any institution.

Commentary

I concur with the findings and conclusions drawn from this study. I believe that leadership, funding, support, acceptance, and technology are the major factors that foster or impede distance education. The results of this study reinforce my assumption that distance education is a complex system of interacting and interdependent factors that are deeply intertwined with broader educational issues. Furthermore, they reinforce my belief that distance education is a metaphor for the comprehensive educational innovations and institutional transformations that are taking place in the Washington State community and technical colleges.

Each of the five major factors identified in this study represents a complicated issue that impacts distance education. Although they emerged from the context of this study, I believe the factors of leadership, funding, support, acceptance, and technology and their relationships are not unique - either to distance education or to the Washington State community and technical colleges. While funding, technology capacity, and support factors are problematic, the issues associated with these factors have relevant precedents that aid in their resolution. The factors of leadership and acceptance, however, are less well understood and less easily resolved - especially during times of uncertain and rapid change.

I believe that the relationship between institutional leadership decision making and acceptance of leadership decisions by institution stakeholders is an important dynamic of higher education transformation that transcends the topic of distance education. In my judgement, it exemplifies the tension that is created in moving from the traditional paradigm to a more transformational paradigm of higher education. Traditional consensus-based higher education leaders are slow to react to changing educational marketplace conditions. In building acceptance among institutional stakeholders for directions and decisions, consensus-based leaders often forego short-term gains in favor of more sustainable long-term outcomes. More market-driven models of higher education leadership, however, rely less on institutional acceptance for decision making. As a result, market-driven leaders act upon opportunities more quickly, but often face resistance to change from institutional stakeholders. That resistance may delay or impede longer term benefits. Finding the right "mix" between traditional consensus-based leadership and market-driven leadership is a fundamental challenge facing higher education leaders as they respond to the changes that are taking place in community and technical colleges.

As distance education evolves and expands in the Washington State community and technical colleges, the factors that foster or impede distance education will emerge and evolve as well. For example, in the year since the data for this study were collected, each of the five potential factors grew in significance and influence. Each of five potential factors of intellectual property, governance, contracts, policies, and accreditation now has a greater influence on the success or failure of distance education initiatives. I believe a number of circumstances contribute to the heightened presence of these factors. The growth of distance education and the expansion of inter-institutional distance education agreements place a premium on the development of distance education policies and governance structures at both the state level and the individual college level. Accreditation agencies are pressing individual community and technical colleges and college consortia for assurances of compliance with accreditation standards for distance education activities. Intellectual property rights and contracting of distance educational instructional services have surfaced on collective bargaining agenda. Combined with the major factors identified in this study, these expanding factors reflect distance education's growing fusion with core community and technical college issues. I expect that pattern will continue as distance education becomes more deeply integrated with community and technical college missions.

REFERENCES

Academic Innovation Center. (1997). Virtual universities California style [Video Tape]. Fresno: California State University Fresno.

Ackoff, R., L. (1974). *A management scientist looks at education and education looks back.* Paper presented at the American Association for the Advancement of Science Symposium, San Francisco, CA. (ERIC Document Reproduction Service No. ED 091 278)

Ackoff, R. L. (1995). *From mechanistic to social systemic thinking* [Videotape]. (Tape number V9303). Cambridge, MA: Pegasus Communications, Inc.

Akyurekoglu, H. (1996). A critical perspective on using communication and information technologies in adult and continuing education. *Journal of Continuing Higher Education, 44*(1), 25-30.

American Council on Education. (1996). *Distance learning evaluation guide*. Washington, DC: American Council on Education.

American Council on Education. (1996). *Guiding principles for distance learning in a learning society*. Washington, DC: Author.

Arms, C. R. (1992). The impact of information technology on universities in the United States. *Higher Education Management, 4*(3), 293-307.

Association of Governing Boards of Universities and Colleges. (1995). *Ten public policy issues for higher education in 1995* (AGB Public Policy Series No. 95-1). Washington, DC: Author.

Baird, M. A., & Monson, M. K. (1992). Distance education: Meeting diverse learners' needs in a changing world. *New Directions for Teaching and Learning, 51 (Teaching in the Information Age: The Role of Educational Technology)*, 65-76.

Baker, R. L. (1995). *Distance education in the Washington state community and technical colleges: An inventory of 1994 - 1995 activities.* Paper presented at the League for Innovation in the Community College Conference on Information Technology, Kansas City, MO.

Baker, R. L. (1996). *Distance education in the Washington state community and technical colleges: An inventory of 1995 - 1996 activities* : Washington State Board for Community and Technical Colleges.

Baker, R. L. (1997). *Distance education in the Washington State community and technical colleges: An inventory of 1996 - 1997 activities and summary of activities: 1994/1995-1996/1997*. Olympia: Washington State Board for Community and Technical Colleges.

Baker, R. L. (1997). *Strategic plan of the Oregon community colleges for distance learning*. Salem: Oregon Community Colleges.

Baker, W. J., & Gloster, A. S., II. (1994). Moving towards the virtual university: A vision of technology in higher education. *CAUSE/EFFECT, 17*(2), 4-11.

Balzer, J. A. (1994). *The learning action plan: A new approach to information technology planning in community colleges*. Boulder, CO: CAUSE.

Barr, R. B. (1995). From teaching to learning: A new reality for community colleges. *Leadership Abstracts, 8*(3).

Barr, R. B., & Tagg, J. (1995). From teaching to learning--a new paradigm for undergraduate education. *Change, 27*(6), 12-25.

Bates, T. (1995). *Technology, open learning, and distance education*. London: Routledge.

Batson, T., & Bass, R. (1996). Teaching and learning in the computer age. *Change, 28*(2), 42-47.

Battin, P. (1996). Making it happen: Leadership in a transformational age. *CAUSE Professional Paper Series, #15*, 24-27.

Beare, P. L. (1989). The comparative effectiveness of videotape, audiotape, and telelecture in delivering continuing teacher education. *American Journal of Distance Education, 3*(2), 57-66.

Beaudoin, M. (1990). The instructor's changing role in distance education. *American Journal of Distance Education, 4*(2), 21-29.

Berman, P., Wyman, R., & Kunz, K. (1992). *The feasibility of statewide distance education* (Commission on Innovation Policy Discussion Paper Number 5). (ERIC Document Reproduction Service No. ED 372 811)

Bertalanffy, L. V. (1968). *General system theory: Foundations, development, applications*. New York: G. Braziller.

Blumhardt, J. H., & Cross, L. R. (1996). Making the jump(s) into cyberspace: A discussion on distance learning paradigm shifts required for the 21st century. *ED, Education at a Distance, 10*(1), 13-21.

Bogdan, R. C., & Biklen, S. K. (1992). *Qualitative research for education: An introduction to theory and methods* (2nd ed.). Needham Heights, MA: Allyn and Bacon.

Boggs, G. R. (1993). *Community colleges and the new paradigm.* Paper presented at the annual conference of the National Institute for Staff and Organizational Development (NISOD), Austin, TX. (ERIC Document Reproduction Service No. ED 366 363)

Boggs, G. R. (1995). The paradigm for community colleges--who's leading the way? *Catalyst, 25*(1), 27-28.

Borg, W. R., Gall, J. P., & Gall, M. D. (1993). *Applying educational research: A practical guide* (3rd ed.). White Plains, NY: Longman.

Brand, M. (1995). The wise use of technology. *Educational Record, 76*(4), 38-45.

Brey, R. (1991). *U.S. postsecondary distance learning programs in the 1990s: A decade of growth.* Washington, DC: American Association of Community and Technical Colleges. (ERIC Document Reproduction Service No. ED 340 418)

Brigham, D. E. (1992). Factors affecting the development of distance education courses. *Distance Education, 13*(2), 169-192.

Brown, F. B., & Brown, Y. (1994). Distance education around the world. In B. Willis (Ed.), *Distance education: Strategies and tools* (pp. 3-39). Englewood Cliffs, NJ: Educational Technology Publications, Inc.

Brown, J. S., & Duguid, P. (1996). Universities in the digital age. *Change, 28*(4), 10-19.

Burke, J. C. (1994). Education's new challenge and choice: Instructional technology -- old byway or superhighway? *Leadership Abstract, 7*(10). (ERIC Document Reproduction Service No. ED 374 873)

California State Postsecondary Education Commission. (1989). *Technology and the future of education: Directions for progress* (Report 89-27). Sacramento, CA: California State Postsecondary Education Commission. (ERIC Document Reproduction Service No. ED 330 249)

California State Postsecondary Education Commission. (1991). *State policy on technology for distance learning: Recommendations to the Legislature and the Governor in response to Senate Bill 1202 (Chapter 1038, Statutes of 1989)* (CPEC-91-7). Sacramento: California State Education Commission. (ERIC Document Reproduction Service No. ED 340 358)

Carl, D. R., & Densmore, B. (1988). Introductory accounting on distance university education via television (DUET): A comparative evaluation. *Canadian Journal of Educational Communication, 17*(2), 81-94.

Carnegie Council on Policy Studies in Higher Education. (1986). *Three thousand futures: The next twenty years for higher education*. San Francisco, CA: Jossey-Bass.

Cartwright, G. P. (1994). Distance learning: A different time, a different place. *Change, 26*(4), 30-32.

Catchpole, M. J. (1992). Classroom, open, and distance teaching: A faculty view. *American Journal of Distance Education, 6*(3), 34-44.

Cheng, H. C., Lehman, J., & Armstrong, P. (1991). Comparison of performance and attitude in traditional and computer conferencing classes. *American Journal of Distance Education, 5*(3), 51-64.

Clark, T. (1993). Attitudes of higher education faculty toward distance education: A national survey. *American Journal of Distance Education, 7*(2), 19-33.

Clark, T. A., & Verduin, J. R., Jr. (1989). Distance education: its effectiveness and potential use in lifelong learning. *Lifelong Learning: An Omnibus of Practice and Research, 12*(4), 24-26.

Cochren, J. R. (1995). *A conceptual model to assist educational leaders manage change*. (ERIC Document Reproduction Service No. ED 383 053)

Collins, A. (1990). The role of computer technology in restructuring schools. In K. Sheingold & M. S. Tucker (Eds.), *Restructuring for learning with technology* (pp. 29-45). New York: Bank Street College of Education.

Commission on Colleges. (1996). *Accreditation handbook* (1996 ed.). Bellevue, WA: Author.

Commission on the Future of Community Colleges. (1988). *Building communities: A vision for a new century*. Washington, DC: American Association of Community and Junior Colleges, National Center for Higher Education.

Communications Technology Center. (1997). *About the CTC*. Bellevue, WA: Author. (Retrieved July 10, 1997 from the World Wide Web: http://web.ctc.edu/CTC_gen_info/aboutctc.htm)

Congress of the United States. (1989). *Linking for learning. A new course for education. Summary*. Washington, DC: Office of Technology Assessment. (ERIC Document Reproduction Service No. ED 310 766)

Connick, G. P. (1996). *Planning for distance education projects*. Portland, ME: Distance Education Publications.

Cropley, A. J. (1982). Educational technology and educational practice: The case of lifelong learning. In C. K. Knapper (Ed.), *Expanding learning through new communication technologies* (pp. 69-80). San Francisco: Jossey-Bass.

Cummings, L. E. (1995). Educational technology--a faculty resistance view Part I: Incentives and understanding. *Educational Technology Review* , *4*, 13-18.

Cvancara, K. J. (1997). *21st century reform.* Paper presented at the American Association of Community Colleges 77th annual convention, Anaheim, CA. (Retrieved April 26, 1997 from the World Wide Web: http://www.aacc.nche.edu/COMMUN/NEWS/conven97/pelton.htm)

D'Amico, S. J. (1995). *High technology and distance learning.* Paper presented at the twenty-third annual conference of the National Center for the Study of Collective Bargaining in Higher Education and the Professions, New York. (ERIC Document Reproduction Service No. ED 388 130)

Daniel, S. J. S. (1997). Why universities need technology strategies. *Change, 29*(4), 11-17.

Dean, L. (1994). Telecomputer communication: The model for effective distance learning. *ED Journal, 8*(12), J1-J9.

Dede, C. (1994). Leadership without followers. In G. Kearsley & W. Wynch (Eds.), *Educational technology: Leadership perspectives* (pp. 19-28). Englewood Cliffs, NJ: Educational Technology Publications.

Dede, C. (1996). The evolution of distance education: Emerging technologies and distributed learning. *American Journal of Distance Education, 10*(2), 4-36.

Dede, C. J. (1990). Imaging technology's role in restructuring for learning. In K. Sheingold & M. S. Tucker (Eds.), *Restructuring for learning with technology* (pp. 49-72). New York: Bank Street College of Education.

Denton, J. J. (1994). *Impact of a technological integration grant to restructure teacher education on the faculty of one college*. (ERIC Document Reproduction Service No. ED 372 030)

Denzin, N. K. (1970). *The research act: a theoretical introduction to sociological methods*. Chicago: Aldine Publishing Company.

Denzin, N. K., & Lincoln, Y. S. (1994). *Handbook of qualitative research*. Thousand Oaks, CA: SAGE Publications.

Dillon, C. L., & Walsh, S. M. (1992). Faculty: The neglected resource in distance education. *American Journal of Distance Education, 6*(3), 5-21.

Dolence, M. G., & Norris, D. M. (1995). *Transforming higher education : A vision for learning in the 21st century*. Ann Arbor, MI: Society for College and University Planning.

Doucette, D. (1993a). Reengineering or just tinkering. In R. C. Heterick, Jr. (Ed.), *Reeningeering teaching and learning in higher education: Sheltered groves, camelot, windmills, and malls* (Vol. CAUSE Professional Paper Series #10, pp. 43-45). Boulder, CO: CAUSE.

Doucette, D. (1993b). Transforming teaching and learning using information technology: Community college leadership in higher education. *College Board Review, 167*, 18-25.

Doucette, D. (1997). The community college niche in a competitive higher education market. *Leadership Abstracts, 10*(2).

Dunning, B. (1990). The literature of management. In M. G. Moore (Ed.), *Contemporary issues in distance education* (pp. 30-43). New York: Pergamon Press.

Eaton, J. (1992). The coming transformation of community colleges. *Planning for Higher Education, 21*(1), 1-7.

Ehrmann, S. C. (1995a). Moving beyond campus-bound education. *The Chronicle of Higher Education, 41*(43), B1.

Ehrmann, S. C. (1995b). New technology, old trap. *Educom Review, 30*(5), 41-43.

Epper, R. M. (1996). *Coordination and competition in postsecondary distance education: A comparative case study of statewide policies.* Paper presented at the annual meeting of the American Educational Research Association, New York. (ERIC Document Reproduction Service No. ED 394 437)

Ericksen, S. C. (1977). Restless teachers and institutional support for change. *Educational Psychologist, 12*(2), 207-214.

Evans, R. (1993). The human face of reform. *Educational Leadership, 51*(1), 19-23.

Faibisoff, S. G., & Willis, D. J. (1987). Distance education: Definition and overview. *Journal of Education for Library and Information Science, 27*(4), 223-232.

Fetterman, D. M. (1989). *Ethnography: Step by step.* Newbury Park, CA: SAGE Publications.

Fontana, A., & Frey, J. H. (1994). Interviewing: The art of science. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 361-376). Thousand Oaks, CA: SAGE Publications.

Fraenkel, J. R., & Wallen, N. E. (1993). *How to design and evaluate research in education* (2nd ed.). New York: McGraw-Hill, Inc.

Franklin, N., Yoakam, M., & Warren, R. (1996). *Distance learning: A guide to system planning and implementation.* Bloomington: Indiana University.

Galusha, J. M. (1997). *Barriers to learning in distance education.* Hattiesburg, MS: University of Southern Mississippi. (Retrieved August 31, 1997, from the World Wide Web: http://www.infrastruction.com/articles.htm)

Gardner, J. W. (1990). *On leadership.* New York: Free Press.

Garland, M. R. (1993). Student perceptions of the situational, institutional, dispositional and epistemological barriers to persistence. *Distance Education, 14*(2), 181-198.

Gharajedaghi, J., & Ackoff, R. L. (1985). Toward systemic education of systems scientists. *Systems Research, 2*(1), 21-27.

Gilbert, S. W. (1994). If it takes 40 or 50 years, can we still call it a revolution? *Educational Record, 75*(3), 19-28.

Gilbert, S. W. (1995a). Education technology and transformation. *Community College Journal, 66*(2), 14-18.

Gilbert, S. W. (1995b). Teaching, learning & technology--the need for campuswide planning and faculty support services. *Change, 27*(2), 46-48.

Gilbert, S. W. (1995c). The technology "revolution": Important questions about a work in progress. *Change, 27*(2), 6-7.

Gilbert, S. W. (1996a). Double visions - paradigms in balance or collision? *Change, 28*(2), 8-9.

Gilbert, S. W. (1996b). Making the most of a slow revolution. *Change, 28*(2), 10-23.

Glaser, B. G. (1978). *Theoretical sensitivity: Advances in the methodology of grounded theory.* Mill Valley, CA: Sociology Press.

Glaser, B., G., & Strauss, A. L. (1967). *The discovery of grounded theory: Strategies for qualitative research.* Chicago: Aldine Publishing Company.

Green, K. C. (1991). A technology agenda for the 1990s. *Change, 233*(1), 6-7.

Green, K. C. (1996a). Building a campus infostructure [Special issue]. *Trusteeship*, 4-9.

Green, K. C. (1996b). *The campus computing project.* Claremont, CA: Claremont Graduate School. (Retrieved April 9, 1997 from the World Wide Web: http://ericr.syt.edu/Projects/Campus_computing/1996/index.html)

Green, K. C. (1996c). The coming ubiquity of information technology. *Change, 28*(2), 24-31.

Green, K. C., & Gilbert, S. W. (1995). Great expectations: Content, communications, productivity, and the role of information technology in higher education. *Change, 27*(2), 8-18.

Grimes, P. W., Krehbiel, T. L., Nielsen, J. E., & Niss, J. F. (1989). The effectiveness of "Economics U$A" on learning and attitudes. *Journal of Economic Education, 20*(2), 139-152.

Gross, R. (1995). Defining the future: The new mandate for distance learning in the 21st century. *Community College Journal, 66*(2), 28-33.

Gross, R., Gross, D., & Pirkl, R. (1998). *New connections: A guide to distance education* (2nd ed.). Washington, DC: Instructional Telecommunications Council.

Grossman, D. M. (1987). *Hidden perils: Instructional media and higher education* (Occasional Paper 5). Washington, DC: National University Continuing Education Association.

Guba, E. G., & Lincoln, Y. S. (1994). Competing paradigms in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 105-117). Thousand Oaks, CA: SAGE Publications.

Guskin, A. E. (1994a). Reducing student costs and enhancing student learning: The university challenge of the 1990s. Part I: Restructuring the administration. *Change, 26*(4), 22-29.

Guskin, A. E. (1994b). Reducing student costs and enhancing student learning: The university challenge of the 1990s. Part II: Restructuring the role of the faculty. *Change, 26*(5), 16-25.

Guskin, A. E. (1996). Facing the future: The change process in restructuring universities. *Change, 28*(4), 26-37.

Hawkins, J. (1991). Technology-mediated communities for learning: Designs and consequence. *Annals of the American Academy of Political and Social Science, 514*, 159-174.

Hazen, M. (1992). Academic computing: How to address the teaching and learning challenge. *New Directions for Teaching and Learning, 51*, 43-53.

Heterick, R. C., Jr. (1993a). Introduction: Reengineering teaching and learning. In R. C. Heterick, Jr. (Ed.), *Reengineering teaching and learning in higher education: Sheltered groves, Camelot, windmills, and malls* (pp. 7-11). Boulder, CO: CAUSE.

Heterick, R. C., Jr. (Ed.). (1993b). *Reeningeering teaching and learning in higher education: Sheltered groves, camelot, windmills, and malls*. (Vol. CAUSE Professional Paper Series #10). Boulder, CO: CAUSE.

Heterick, R. C., Jr. (1994). Technological change and higher education policy. *Priorities, Spring 1994*.

Hezel, R. T. (1991). Statewide planning for telecommunications in education: Some trends and issues. *TechTrends, 36*(5), 17-20.

Hodder, I. (1994). The interpretation of documents and material culture. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 393-402). Thousand Oaks, CA: SAGE Publications.

Holloway, R. E., & Ohler, J. (1995). Distance education in the next decade. In G. J. Anglin (Ed.), *Instructional technology: past present, and future* (2nd ed) (pp. 288-295). Englewood, CO: Libraries Unlimited.

Holmberg, B. (1995). *Theory and practice of distance education* (2nd ed.). New York: Routledge.

Holznagel, D. C. (1990). *A depiction of distance education in the Northwest region*. Portland, OR: Northwest Regional Educational Lab. (ERIC Document Reproduction Service No. ED 344 566)

Jeffries, M. (1996). *Research in distance education*. (Retrieved December 27, 1996, from the World Wide Web: http://www.ind.net/IPSE/fdhandbook/resrch.html)

Johnstone, S. M. (1991). Research on telecommunicated learning: Past, present, and future. *Annals of the American Academy of Political and Social Science, 514*, 49-57.

Johnstone, S. M., & Krauth, B. (1996a). Balancing equity and access: Some principles of good practice for the virtual university. *Change, 28*(2), 38-41.

Johnstone, S. M., & Krauth, B. (1996b). Some principles of good practice for the virtual university. *Change, 28*(2), 38-41.

Kanter, R. (1983). *The change masters: Innovation for productivity in the American corporation*. New York: Simon and Schuster, Inc.

Kanter, R. M. (1985, April). Managing the human side of change. *Management Review, 74*, 52-56.

Kaye, A., & Rumble, G. (1979). *An analysis of distance teaching systems*. Milton Keynes: Open University.

Kearsley, G., & Lynch, W. (1992). Educational leadership in the age of technology: The new skills. *Journal of Research on Computing in Education, 25*(1), 50-60.

Kearsley, G., & Lynch, W. (1994). Educational leadership in the age of technology: The new skills. In G. Kearsley & W. Wynch (Eds.), *Educational technology: Leadership perspectives* (pp. 1-19). Englewood Cliffs, NJ: Educational Technology Publications.

Keegan, D. (1990). *Foundations of distance education* (2nd ed.). New York: Routledge.

Kelly, H. (1990). Technology and the transformation of American education. *THE Journal, 18*(1), 60-63.

Kelly, M. (1993, July/August). Taming the demons of change. *Business Ethics.*

Kendall, J. R., & Oaks, M. (1992). Evaluation of perceived teaching effectiveness: Course delivery via interactive video technology versus traditional classroom methods. *Journal of Continuing Higher Education, 40*(3), 2-12.

King, M. C. (1995). *Distance learning and technology plan.* Cocoa, FL: Brevard Community College. (ERIC Document Reproduction Service No. ED 402 957)

Knapper, C. K. (1988). Lifelong learning and distance education. *American Journal of Distance Education, 2*(1), 63-72.

Kolderie, T. (1990). How structural change can speed the introduction of technology. In K. Sheingold & M. S. Tucker (Eds.), *Restructuring for learning with technology* (pp. 94-103). New York: Bank Street College of Education.

Kovel-Jarboe, P. (1989). *Organization and technology issues related to distance education* (TCD Research Report No. 3). Minneapolis: University of Minnesota, Telecommunications Development Center. (ERIC Document Reproduction Service No. ED 314 030)

Kozma, R. B., & Johnston, J. (1991). The technological revolution comes to the classroom. *Change, 23*(1), 10-20, 22-23.

Krauth, B. (1996). Principles of good practice for distance learning programs. *CAUSE/EFFECT, 19*(1), 6-8.

Lever, J. (1993). *Multi-access education: A model for instructional delivery in the information age.* Paper presented at the League for Innovation in the Community College reinventing the community college conference, Nashville, TN.

Lever, J. C. (1991). *Distance learning: An alternative approach to education in the information age.* (Unpublished paper.)

Lever, J. C. (1992). Meeting increasing demand using distance education. *Leadership Abstracts, 5*(2).

Lever-Duffy, J., & Lemke, R. A. (1996). Distance education in the community college. *Leadership Abstracts, 9*(11).

Lewis, R., & Wall, M. (1988). *Exploring obstacles to uses of technology in higher education A discussion paper.* Paper presented at the technology in higher education workshop: A round table, Washington, DC (ERIC Document Reproduction Service No. ED 304 073)

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry.* Newbury Park, CA: SAGE Publications.

Lindeman, C. A. (1974). *Delphi survey of clinical nursing research priorities.* Boulder, CO: Western Interstate Commission for Higher Education.

Lorenzo, A. L., & Gauri, K. B. (1988). Educational implications of technological innovations: A perspective. *Library Hi Tech, 6*(1), 55-59.

Maciavelli, N. (1984). *The prince* (Peter Bondanella & Mark Musa, Trans.). Oxford, England: Oxford University Press. (Original work published 1532)

Macunovich, D. J. (1997). Will there be a boom in the demand for U.S. higher education among 18- to 24- year-olds? *Change, 29*(3), 34-44.

Marsh, D. T. (1989). *An introduction to leadership and its functions in further and higher education* (Information Bank Working Paper Number 2555). Blagdon, England: Further Education Staff College. (ERIC Document Reproduction Service No. ED 324 553)

Martin, E. D., & Rainey, L. (1993). Student achievement and attitude in a satellite-delivered high school science course. *American Journal of Distance Education, 7*(1), 54-61.

McCleary, I. D., & Winston, E. M. (1989). Program design and evaluation: Two-way interactive television. *American Journal of Distance Education, 3*(1), 50-60.

Merriam, S. B. (1988). *Case study research in education: A qualitative approach.* San Francisco: Jossey-Bass Publishers.

Merriam, S. B., & Simpson, E. L. (1995). *A guide to research for educators and trainers of adults* (2nd ed.). Malabar, FL: R. E. Krieger Publishing Company.

Merriam-Webster Editorial Staff. (1996). *Merriam-Webster's Collegiate Dictionary* (10th ed.). Springfield, MA: Merriam-Webster, Inc.

Miller, C. D., & Clouse, R. W. (1994). Technology-based distance learning: Present and future directions in business and education. *Journal of Educational Technology Systems, 22*(3), 191-204.

Miller, G. E. (1988). *Interactive technologies and the transformation of the curriculum.* Paper presented at the Alliance Conference on External Degree Programs. (ERIC Document Reproduction Service No. ED 320 534)

Mingle, J. R., & Heydinger, R. B. (1994, Fall). Beyond faculty workload: External forces affecting the future of the professorate. *New Directions for Institutional Research, 83*, 85-97.

Mishler, E. G. (1986). *Research interviewing: context and narrative.* Cambridge, MA: Harvard University Press.

Moberg, T. F. (1993). A third opinion from Camelot. In R. C. Heterick, Jr. (Ed.), *Reeningeering teaching and learning in higher education: Sheltered groves, camelot, windmills, and malls* (Vol. CAUSE Professional Paper Series #10, pp. 37-40). Boulder, CO: CAUSE.

Monaghan, P. (1995). Technology and the unions. *Chronicle of Higher Education, 41*(22), A17.

Moore, M. G. (1994). Administrative barriers to adoption of distance education. *American Journal of Distance Education, 8*(3), 1-4.

Moore, M. G., & Kearsley, G. (1996). *Distance education: A systems view.* Belmont, CA: Wadsworth Publishing Company.

Moore, M. G., & Thompson, M. M. (1997). *The effects of distance learning* (revised ed.). University Park: The Pennsylvania State University.

Moore, M. G., Thompson, M. M., Quigley, B. A., Clark, G. C., & Goff, G. G. (1990). *The effects of distance learning: A summary of literature.* University Park: The Pennsylvania State University.

Morris, W. (Ed.). (1982). *The American heritage dictionary* (2nd College ed.). Boston, MA: Houghton-Mifflin.

Morrison, D., & Lauzon, A. C. (1992). Reflection on some technical issues of "connecting" learners in online education. *Research in Distance Education, 4*(3), 6-9.

Morse, J. M. (1994). Designing funded qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 220-235). Thousand Oaks, CA: SAGE Publications.

Mortimer, K. P., Astin, A. W., Blake, J. H., Bowen, H. R., Gamson, Z. F., Hodgkinson, H. L., & Lee, B. (1984). Involvement in learning: Realizing the potential of American higher education. *The Chronicle of Higher Education,* 35-49.

Munitz, B. (1995). Wanted: New leadership for higher education. *Planning for Higher Education, 24*(1), 9-16.

Myran, G., Zeiss, T., & Howdyshell, L. (1996). Community college leadership in the new century. *Leadership Abstracts, 9*(2).

National Center for Higher Education Management Systems. (1996). *The promise of technology-based instruction: What we are learning*. Boulder, CO: Author. (Retrieved September 1, 1997, from the World Wide Web: http://www.nchems.com/news0396.htm#promise)

Norris, D. M., & Dolence, M. G. (1996). IT leadership is key to transformation. *CAUSE/EFFECT, 19*(1), 12-20.

Nunan, T., & Calvert, J. (1992). *Quality and standards in distance education report to the National Distance Education Conference*. Victoria, Australia. (ERIC Document Reproduction Service No. ED 369 980)

O'Banion, T. (1994a). Sustaining innovation in teaching and learning. *Leadership Abstracts, 7*(4). (ERIC Document Reproduction Service No. ED 369 446)

O'Banion, T. (1994b). Teaching and learning: A mandate for the nineties. *Community College Journal, 64*(4), 20-25.

O'Banion, T. (1995). Community colleges lead a learning revolution. *Educational Record, 76*(4), 23-27.

O'Banion, T. (1996a). A learning college for the 21st century. *Community College Journal, 66*(3), 18-23.

O'Banion, T. (1996b). Learning communities, learning organizations, and learning colleges. *Leadership Abstracts, 9*(8).

Oberlin, J. L. (1996). The financial mythology of information technology: The new economics. *CAUSE/EFFECT, 19*(1), 21-29.

Oblinger, D. G., & Maruyama, M. K. (1996). *Distributed learning*. (Vol. #14). Boulder, CO: CAUSE.

Ohler, J. (1989). *Distance education and the transformation of schooling. Living and learning in the information age*. (ERIC Document Reproduction Service No. ED 324 407)

Ohler, J. (1991). Why distance education? *Annals of the American Academy of Political and Social Science, 514*, 22-34.

Olcott, D., Jr. (1991). Bridging the gap: Distance learning and academic policy. *Continuing Higher Education Review, 55*(1 & 2), 49-60.

Olcott, D. J., Jr. (1992). Policy issues in statewide delivery of university programs by telecommunications. *American Journal of Distance Education, 6*(1), 14-26.

Olcott, D., Jr., & Wright, S. J. (1995). An institutional support framework for increasing faculty participation in postsecondary distance education. *American Journal of Distance Education, 9*(3), 5-17.

Orcutt, R. L. (1986). Funding models for information technology in higher education. *Information Technology Quarterly, 5*(1), 21-27. (ERIC Document Reproduction Service No. ED 275 320)

Paine, N. (1996). The role of the community college in the age of the Internet. *Community College Journal, 67*(1), 33-37.

Parrott, S. (1995). *Future learning: distance education in community colleges. ERIC Digest*. Los Angeles, CA: ERIC Clearinghouse for Community Colleges.

Penrod, J. I., & Dolence, M. G. (1992). *Reengineering: A process for transforming higher education* (Professional Paper Series, #9). Boulder, CO: CAUSE. (ERIC Document Reproduction Service No. ED 345 651)

Perelman, L. J. (1994). Closing education's technology gap. In G. Kearsley & W. Wynch (Eds.), *Educational technology: Leadership perspectives* (pp. 181-195). Englewood Cliffs, NJ: Educational Technology Publications.

Purdy, L. N., & Wright, S. J. (1992). Teaching in distance education: A faculty perspective. *American Journal of Distance Education, 6*(3), 2-4.

Reed, D., & Sork, T. J. (1990). Ethical considerations in distance education. *American Journal of Distance Education, 4*(2), 30-43.

Reigeluth, C. M. (1995). Educational systems development ant its relationship to ISD. In G. J. Anglin (Ed.), *Instructional technology: Past present and future* (2^{nd} ed) (p. 431). Englewood, CO: Libraries Unlimited, Inc.

Richards, T. J., & Richards, L. (1994). Using computers in qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 445-462). Thousand Oaks, CA: SAGE Publications.

Rogers, S. M., & Wells, T. (1997). Computer-mediated communications: Alternative environments for learning. *DEOSNEWS, 7*(6), [Online serial].

Romiszowski, A. J., & Criticos, C. (1994). The training and development of educational technologists. In G. Kearsley & W. Wynch (Eds.), *Educational technology: Leadership perspectives* (pp. 165-180). Englewood Cliffs, NJ: Educational Technology Publications.

Roueche, J. E., & Johnson, L. (1994). A new view of the mission of American higher education. *Leadership Abstracts, 7*(1).

Russell, T. L. (1997). *The "no significant difference" phenomenon.* Fredericton, NB, Canada: TeleEducation NB. (Retrieved January 27, 1997, from the World Wide Web: http://tenb.mta.ca/phenom/)

Saba, F., & Twitchell, D. (1988). Research in distance education: A system modeling approach. *American Journal of Distance Education, 2*(1), 9-24.

Schwartz, P., & Ogilvy, J. (1979). *The emergent paradigm: Changing patterns of thought and belief* (Analytical Report 7). Menlo Park, CA: SRI International.

Seidman, I. E. (1991). *Interviewing as qualitative research: A guide for researchers in education and the social sciences.* New York: Teachers College Press.

Sherritt, C. A. (1992). Forum: The hidden agendas of distance education. *Journal of Adult Education, 21*(2), 31-35.

Sherritt, C. A., & Basom, M. (1996). A good case for educational change. *Cleaning House, 69*(5), 287-289.

Sherron, G. T., & Boettcher, J. V. (1997). *Distance learning: The shift to interactivity*. (Vol. #17). Boulder, CO: CAUSE.

Sherry, L. (1996). Issues in distance learning. *International Journal of Distance Learning, 1*(4), 337-365.

Simonson, M. (1995). Does anyone really want to learn? *TechTrends, 40*(5), 12.

Simpson, J. A., & Weiner, E. S. (1989). *Oxford English Dictionary* (2nd deluxe ed.). Oxford, England: Oxford University Press.

Smallen, D. L. (1993). Reengineering of student learning? A second opinion from Camelot. In J. Robert C. Heterick (Ed.), *CAUSE Professional Paper #10* (p. 56). Boulder, CO: CAUSE.

Southern Regional Education Board. (1997). *Principles of good practice for academic degree certificate programs and credit courses offered electronically*. Atlanta, GA: Author. (Retrieved September 21, 1997 from the World Wide Web: http://www.sreb.org/programs/etcoop/aboutcoop/projects/pogo.html)

Spina, P. A. (1988). *The true cost of tomorrow's educational technology--money isn't everything*. Paper presented at the annual conference of the League for Innovation in the Community College, Toronto, Ontario, CA. (ERIC Document Reproduction Service No. ED 305 892)

Stainback, S., & Stainback, W. (1988). *Understanding & conducting qualitative research*. Dubuque, IA: Kendall/Hunt Publishing Company. (ERIC Document Reproduction Service No. ED 300 937)

Stern, M. R. (1992). The new majority: Impact of older students upon the university today. *Higher Education Management, 4*(1), 13-27.

Strauss, A. L. (1987). *Qualitative analysis for social scientists*. New York: Cambridge University Press.

Strauss, A. L., & Corbin, J. (1990). *Basics of qualitative research: Grounded theory, procedures, and techniques*. Newbury Park, CA: Sage Publications.

Strauss, A., & Corbin, J. (1994). Grounded theory methodology. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 273-285). Thousand Oaks, CA: SAGE Publications.

Talbott, M. (MTALBOTT@bcc.ctc.edu). (1997a, February 27). Washington virtual university. E-mail to Ron Baker (RBAKER@ctc.edu).

Talbott, M. (MTALBOTT@bcc.ctc.edu). (1997b, June 10). Distance education background. E-mail to Ron Baker (RBAKER@ctc.edu).

Taylor, S. J., & Bogdan, R. C. (1984). *Introduction to qualitative research methods: The search for meanings* (2nd ed.). New York: John Wiley & Sons, Inc.

Thach, L., & Murphy, K. L. (1994). Collaboration in distance education: From local to international perspectives. *American Journal of Distance Education, 8*(3), 5-21.

Threlkeld, R., & Brzoska, K. (1994). Research in distance education. In B. Willis (Ed.), *Distance education: Strategies and tools* (pp. 41-66). Englewood Cliffs, NJ: Educational Technology Publications, Inc.

Truman, B. E. (1997). *Distance education in post secondary institutions and business since 1988*. Orlando, FL: University of Central Florida. (Retrieved September 2, 1997 from the World Wide Web: http://pegasus.cc.ucf.edu/~btruman/dist-lr.html)

Tucker, R. W. (1995). Distance learning programs: Models and alternatives. *Syllabus, 9*(2), 42-46.

Twigg, C. A. (1993). Information technology--enabling transformation. In R. C. Heterick, Jr. (Ed.), *Introduction: Reengineering teaching and learning in higher education: Sheltered groves, Camelot, windmills, and malls* (pp. 34-37). Boulder, CO: CAUSE.

Twigg, C. A. (1994a). The changing definition of learning. *EDUCOM Review, 29*(4), 23-25.

Twigg, C. A. (1994b). *The need for a national learning infrastructure*. Washington, DC: EDUCOM. (Retrieved August 7, 1996 from the World Wide Web: http://www.educom.edu/program/nlii/keydocs/monograph.html)

Twigg, C. A., & Doucette, D. (1992). Improving productivity in higher education--A paradigm shift needed. *Leadership Abstracts, 5*(6).

Verduin, J. R., & Clark, T. A. (1991). *Distance education : the foundations of effective practice*. San Francisco: Jossey-Bass.

Wagner, E. D. (1992). Separating myth and reality in distance education. *Educational Technology, 32*(10), 42-45.

Wagner, E. D. (1993). Variables affecting distance educational program success. *Educational Technology, 33*(4), 28-32.

Washington State Board for Community and Technical Colleges. (1995). *Washington's community and technical colleges*. Olympia, WA: Author.

Washington State Board for Community and Technical Colleges. (1996a). *1997-1999 biennium operating budget request*. Olympia, WA: Author.

Washington State Board for Community and Technical Colleges. (1996b). *Academic year report for 1995-96*. Olympia, WA: Author.

Washington State Board for Community and Technical Colleges. (1996c). *State Board meeting agenda: September 11-12, 1996*. Olympia, WA: Author.

Washington State Board for Community and Technical Colleges. (1996d). *Strategic Plan for Educational Technology: 1996-2001*. Olympia, WA: Author.

Washington State Board for Community and Technical Colleges. (1997). *Overcoming boundaries of time and place: A vision statement for distance learning*. Olympia, WA: Author. (Retrieved August 5, 1997, from the World Wide Web: http://web.ctc.edu/CTC_cust_svcs/et&t/dlvision.htm)

Washington State Board for Community College Education. (1990). *Video telecommunications in Washington community colleges: A descriptive study of the current activities and future plans* (Operations Report No. 90-1). Olympia, WA: Author.

Washington State Department of Information Services. (1996a). *The evolution of WIT*. Olympia, WA: Washington State Department of Information Services. (Retrieved June 9, 1997, from the World Wide Web: http://www.wa.gov/dis/wit/abtwit2.htm)

Washington State Department of Information Services. (1996b). *K-20 telecommunications network provides new educational opportunities for state citizens*. Olympia, WA: Washington State Department of Information Services. (Retrieved June 14, 1997 from the World Wide Web: http://www.wa.gov/dis/matrix/2matrix03.htm)

Washington State Department of Information Services. (1996c). *K-20 TOPC programmatic and policy goals & objectives*. Olympia: Washington

State Department of Information Services. (Retrieved May 27, 1997, from the World Wide Web: http://www.wa.gov/dis/k20topc/pgo.htm)

Washington State Department of Information Services. (1996d). *A technology oversight and management proposal and a funding model for the K-20 educational telecommunications network*. Olympia, WA: Washington State Department of Information Services. (Retrieved May 26, 1997, from the World Wide Web: http://www.wa.gov/DIS/ISB/k20topc/index.html)

Washington State Higher Education Coordinating Board. (1996). *The challenge for higher education: 1996 state of Washington master plan for higher education*. Olympia, WA: Author.

Washington State Office of Financial Management. (1996). *Final report of the governor's task force on higher education*. Olympia, WA: Author.

Washington State Superintendent of Public Instruction. (1992). *Ad hoc technology task force to the governor's council on education reform and funding technology recommendations*. Olympia, WA: Author.

Washington State University. (1995). *WHETS history*. Pullman: Washington Higher Education Telecommunication System. (Unpublished manuscript.)

Washington State Workforce Training and Education Coordinating Board. (1996). *Workforce training: Supply, demand, and gaps*. Olympia, WA: Author.

Western Cooperative for Educational Telecommunications. (1997). *Good practices in distance education*. Boulder, CO: Western Cooperative for Educational Telecommunications.

Western Governors University. (1996). *Western governors university goals and objectives*. Aurora, CO: Author. (Retrieved May 28, 1997, from the World Wide Web: http://www.westgov.org/smart/vu/vuvision.html#role)

Western Governors University. (1997a). *A proposed "academic infrastructure" for credentialing at the Western Governors University (WGU)*. Aurora, CO: Author. (Retrieved May 26, 1997, from the World Wide Web: http://wga-internet.westgov.org/smart/vu/wguacad.htm#C)

Western Governors University. (1997b). *Western governors university: A new learning system for the cybercentury*. Aurora, CO: Author.

Wheatley, M., J. (1994). *Leadership and the new science*. San Francisco: Berrett-Koehler Publishers, Inc.

Wilcox, J. R., & Ebbs, S. L. (1992). *The leadership compass: Values and ethics in higher education* (Report One - 1992 ASHE-ERIC Higher Education Reports). Washington, DC: The George Washington University.

Willis, B. (1992). *Effective distance education: A primer for faculty and administrators* (Monograph Series in Distance Education No. 2). Fairbanks, Alaska University System. (ERIC Document Reproduction Service No. ED 352 447)

Willis, B. (1994a). Distance education: Obstacles and opportunities. *Educational Technology, 34*(5), 34-36.

Willis, B. (1994b). Preface. In B. Willis (Ed.), *Distance education: Strategies and tools* (pp. v-ix). Englewood Cliffs, NJ: Educational Technology Publications.

Wingspread Group on Higher Education. (1993). *An American imperative: Higher expectations for higher education*. Racine, WI: Johnson Foundation.

Witherspoon, J. P. (1997). *Distance education: A planner's casebook*. Boulder, CO: Western Interstate Commission for Higher Education.

Zeller, N. (1995). Distance education and public policy. *Review of Higher Education, 18*(2), 123-148.

APPENDICES

Appendix A

WCET Principles of Good Practice

Principles of Good Practice for Electronically Offered Academic Degree and Certificate Programs

Developed by the
Western Cooperative for Educational Telecommunications

Preamble

These Principles (Western Cooperative for Educational Telecommunications, 1996) are the product of a Western Cooperative for Educational Telecommunications project, Balancing Quality and Access: Reducing State Policy Barriers to Electronically Delivered Higher Education Programs. The three year project, supported by the U.S. Department of Education's Fund for the Improvement of Postsecondary Education, is designed to foster an interstate environment that encourages the electronic provision of quality higher education programs across state lines. The Principles have been developed by a group representing the Western states' higher education regulating agencies, higher education institutions, and the regional accrediting community.

Recognizing that the context for learning in our society is undergoing profound changes, those charged with developing the Principles have tried not to tie them to or compare them to traditional campus structures. The Principles are also designed to be sufficiently flexible that institutions offering a range of programs from graduate degrees to certificates will find them useful.

Several assumptions form the basis for these Principles:

- The electronically offered program is provided by or through an institution that is accredited by a nationally recognized accrediting body.
- The institution's programs holding specialized accreditation meet the same requirements when offered electronically.
- The "institution" may be a traditional higher education institution, a consortium of such institutions, or another type of organization or entity.
- These Principles address programs rather than individual courses.
- It is the institution's responsibility to review educational programs it provides via technology in terms of its own internally applied definitions of these Principles.

CURRICULUM AND INSTRUCTION

- Each program of study results in learning outcomes appropriate to the rigor and breadth of the degree or certificate awarded.
- An electronically offered degree or certificate program is coherent and complete.
- The program provides for appropriate real time or delayed interaction between faculty and students and among students.
- Qualified faculty provide appropriate oversight of the program electronically offered.

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INSTITUTIONAL CONTEXT AND COMMITMENT

Role and Mission

- The program is consistent with the institution's role and mission.
- Review and approval processes ensure the appropriateness of the technology being used to meet the program's objectives.

Faculty Support

- The program provides faculty support services specifically related to teaching via an electronic system.
- The program provides training for faculty who teach via the use of technology.

Resources for Learning

- The program ensures that appropriate learning resources are available to students.

Students and Student Services

- The program provides students with clear, complete, and timely information on the curriculum, course and degree requirements, nature of faculty/student interaction, assumptions about technological competence and skills, technical equipment requirements, availability of academic support services and financial aid resources, and costs and payment policies.
- Enrolled students have reasonable and adequate access to the range of student services appropriate to support their learning.
- Accepted students have the background, knowledge, and technical skills needed to undertake the program.
- Advertising, recruiting, and admissions materials clearly and accurately represent the program and the services available.

Commitment to Support

- Policies for faculty evaluation include appropriate consideration of teaching and scholarly activities related to electronically offered programs.
- The institution demonstrates a commitment to ongoing support, both financial and technical, and to continuation of the program for a period sufficient to enable students to complete a degree/certificate.

EVALUATION AND ASSESSMENT

- The institution evaluates the program's educational effectiveness, including assessments of student learning outcomes, student retention, and student and faculty satisfaction. Students have access to such program evaluation data.
- The institution provides for assessment and documentation of student achievement in each course and at completion of the program.

Appendix B

Chronology of Washington State Distance Education

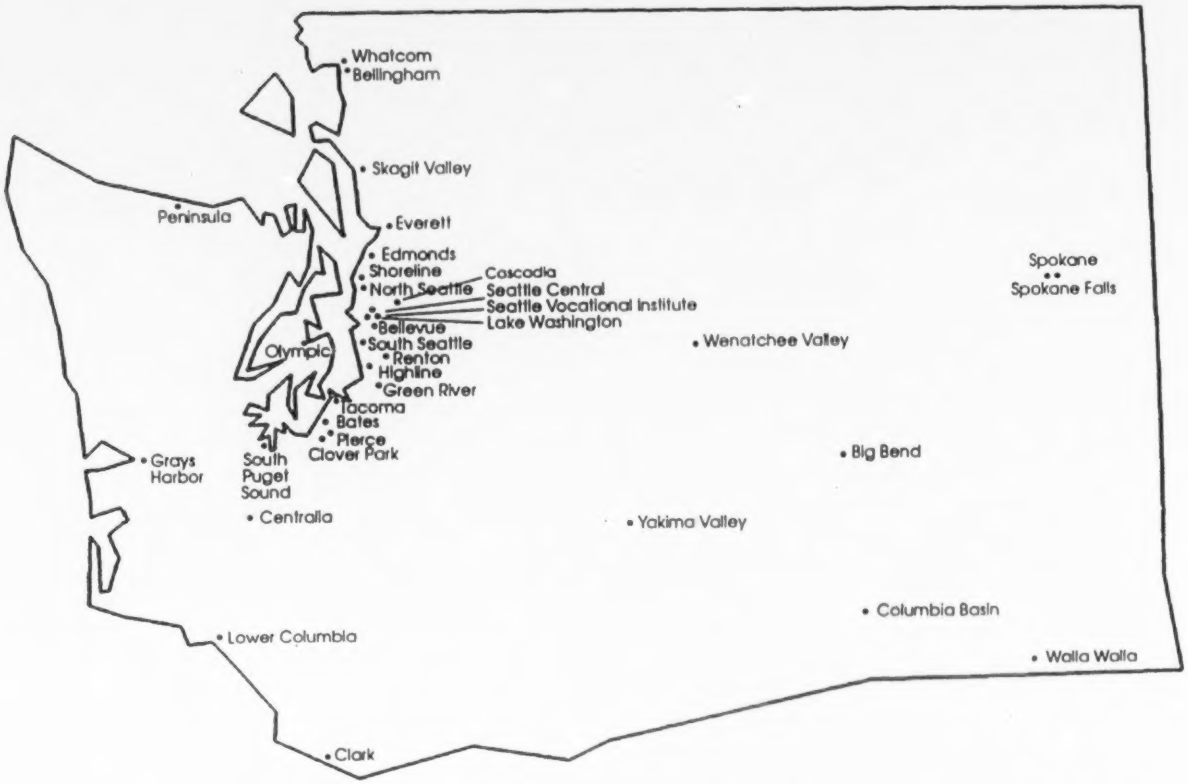
Chronology of Washington State Distance Education

1997	Washington Community and Technical Colleges Online Consortium Approved; Washington Higher Education Distance Education Consortium Formed; WACTC Adoption of Distance Education Vision Statement
1996	K-20 Educational Telecommunications Network Funded; Fund for Innovation and Quality Established; Educational Technology Strategic Plan Developed
1995	Educational Technology Initiative (ETI) Implemented; Western Governors University Formed; Northwest Telecommunications Network Formed; Initial
1994	Washington Community College Distance Education Inventory; Internet Information Group (IIG) Formed
1993	Washington Interactive Television (WIT) Established
1992	Washington Community and Technical Colleges Title III Internet Pilot Project
1991	Community and Technical College Act of 1991 Passed; Communications Technology Center (CTC) Merger
1990	
1989	Triad Pilot Demonstration Project Implemented
1988	
1987	Puget Sound Telecommunication Center Evolution of the Telecommunication Center for the Washington Community Colleges
1986	
1985	WETS (WHETS) Implemented; Bellevue Community College Awarded Annenberg Grant; Puget Sound Telecommunication Center Established
1984	
1983	
1982	Washington Education Telecommunication System (WETS) Authorized
1981	
1980	
1979	
1978	
1977	Washington Community College Telecourse Consortium Formed

Appendix C

Washington State Community and Technical Colleges

Washington State
Community and Technical Colleges



Whatcom
Bellingham
Skagit Valley
Peninsula
Everett
Edmonds
Shoreline
North Seattle
Cascadia
Seattle Central
Seattle Vocational Institute
Lake Washington
Bellevue
Olympic
South Seattle
Renton
Highline
Green River
Tacoma
Bates
Pierce
Clover Park
Grays Harbor
South Puget Sound
Centralia
Spokane
Spokane Falls
Wenatchee Valley
Big Bend
Yakima Valley
Columbia Basin
Walla Walla
Lower Columbia
Clark

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Appendix D

Informed Consent Form

Date:

Dear (Interviewee):

As an community college administrator or distance education practitioner, I am seeking your cooperation in identifying factors and factor patterns which foster or inhibit distance education course availability at your institution. I would like to conduct an in-person interview with you on this topic. The interview will be scheduled at your convenience and last no longer than 1 hour. A short follow-up telephone de-briefing of no more than 20 minutes will be conducted following transcription of the interview. **Your responses will be recorded to aid in data analysis. Your interview will be transcribed, analyzed, and synthesized with responses from other interviews. The identity of the interviewee and all interview responses will be held in strictest confidence.** Your participation in this study is voluntary and you may refuse to answer any question. A very limited number of interviews will be conducted, so you participation is vital to this study.

Community College administrators, faculty, and staff face major challenges in meeting expanding educational needs of students. Demands abound for increased student access to educational programs and services, improved efficiency of institutional operations, and increased learning effectiveness. As technology continues to evolve, distance education alternatives to traditional modes of instruction are being contemplated and explored. Given the number and complexity of the elements of distance education instruction, information is needed to determine the factors and patterns of factors that foster or inhibit the availability of distance education course offerings. This information, when collected and analyzed, may suggest factors or combinations of factors necessary for the successful availability of distance education courses.

If you have any questions about the interview process, please contact me at (541) 737-6398. If I am unavailable to take you call, please leave a message on my voice-mail and I will return your call at my first opportunity.

Thank you for your assistance. Your cooperation is greatly appreciated.

Sincerely,

Dr. Ruth Stiehl
Principle Investigator

Ron Baker
Interviewer

Appendix E

Interview Guide

Interview Guide

AREAS	PROBES	NOTES
Introduction	Read informed consent statement.* Answer interviewee questions.	
Current Position	How did your career lead you to this position? Describe your current duties. How are you involved with distance education?	
Distance Education	Describe your college's history with distance education. Describe the current status of distance education at your college. Describe planned distance education initiatives and future directions for your college. Who are the key decision-makers?	
Reflection and Meaning	What are your views on distance education? What has worked and why? What hasn't worked and why not? What could have been done? What should be done? What are the critical factors/set(s) of factors?	
Closure	Do you have any final thoughts? Answer interviewee questions. Outline next steps.	

* "Your participation in this study of distance education is voluntary and you may refuse to answer any question. Follow-up questions may be asked in a brief second interview or by telephone if necessary to the study. All of your responses will be tape recorded, transcribed, analyzed, and synthesized with responses from interviews with other participants in the study. Individual identities and responses will be held in strictest confidence. Should you decide at any time during this interview to remove yourself from the study, your interview tape(s) will be erased in your presence."